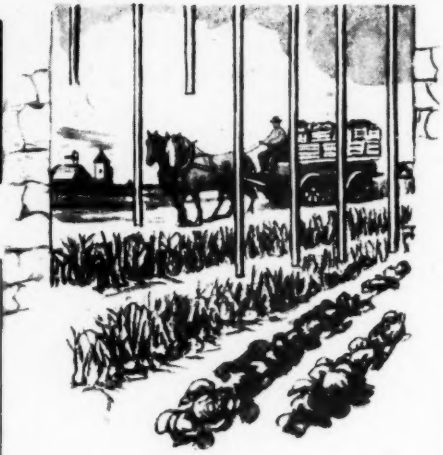
# Better Crops

The Pocket Book of Agriculture.

April 1926 10 Cents

**Read: Cheers and Jeers—Top-Dressing Alfalfa—Efficiency, and then What?—Kentucky Blue Grass**

# Unbar *the profit in your muck soil..*



Muck soils are yielding big crops of celery, cabbage, carrots, onions, sweet corn, lettuce, cauliflower, potatoes, mint, tomatoes, sugar beet, and other specialized crops.

Big profits are being made on the above crops by using high percentages of potash in mixed fertilizers . . . and in some cases, potash alone.

On muck soil in Freeborn county, Minnesota, very profitable onion crops are being raised by using 1000 lbs. per acre of 0-9½-27½.

Other cash crops on muck soils . . including cucumbers and navy beans as well as all the crops mentioned in the panel above . . respond very profitably to fertilizers which contain high percentages of potash.

## Plan now . . today!

BY figuring the facts now . . by making your plans early . . you can remove many *bars* that stand between you and bigger profit.

Consider drainage first! Don't spend any time and money on muck soil unless you have seen to it that the drainage is good.

*Select your fertilizer carefully!*

Low lime peat soil, which some growers call "acid" or "sour" generally needs phosphoric acid and potash. If the land has been cropped for a period of years, nitrogen also is often needed and a complete high grade mixed fertilizer—in addition to lime—may be required.

High lime peat soil, which you may know by the terms "non-acid" or "sweet" is generally lacking in potash alone and the use of potash will result in profitable yields. Sometimes after a period of cropping phosphoric acid is also needed—the fertilizer in this case should be a high grade mixture of phosphoric acid and potash.

With good drainage . . good fertilization . . and the other essential farm practices . . you can produce profitable yields on muck soil.

*FREE. We are now mailing a useful booklet called "Muck Lands" free to growers. If you would like to receive a copy, just write to the address below.*

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**POTASH**

# Better Crops

## The Pocket Book of Agriculture

**The Whole Truth—Not Selected Truth**

VOLUME VI NUMBER TWO

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When well apparel'd April on the heel
of limping winter treads

—*Shakespeare.*

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VOL. VI NEW YORK, APRIL, 1926 No. 2

*An unusual type of frankly honest essay on*

# Cheers and Jeers

By Jeff McDermid

WE are just beginning to get the first inside glimpses into the workings of that most important machine—the human mind.

Alongside the feats performed by a brain which can not only remember in detail things that happened ten years ago, but which can, through observation of natural events, forecast the future, the tricks performed by any man-made machine of gears and wheels seem slow, ponderous and faulty.

The study of the mind—your mind and my mind—is important, because today most accomplishments are mental.

The leader is in the vanguard simply because he has learned how to dominate the minds of others. The salesman sells when he succeeds in swaying the other fellow's mind into the right mood to make a favorable decision. The writer must study psychology—the science of the mind—if he is to influence the multitudes.

And the matter of working harmoniously and successfully with other men is a mental matter—and thus is yet partly a mental mystery.

Handling men is a difficult art. Whether to *cheer* or *jeer* our superiors, inferiors, associates and equals is a problem. Or, to paraphrase Shakespeare, "to cheer or to jeer; that is the question. Whether it is nobler to jeer and by our opposition stir men into greater action, or whether to *cheer* them on when we know they have made errors, and by our cheers improve them!"

ONE day a few years ago a man strode angrily into a country editor's sanctum brandishing aloft a copy of the day's paper and demanding to know "what in blazes they meant by inserting the word 'applesauce' after every important point in the speech he had delivered the night before at a political meeting."

The editor was astonished and, adjusting his steel-rimmed spectacles, sent for the foreman. The foreman, looking over the offending article and comparing it with the reporter's original, explained, "That is only a typographical error, sir. The reporter wrote 'applause' in those places and we merely set it up 'applesauce!'"

*Applause* vs. *applesauce*—a sermon in variation!

We hear a great deal lately about "inferiority complex"—a feeling of inferiority which settles down upon the unfortunate few whom the boss bawls out. And whether criticism or praise is best to bestow upon the deserving is a matter of some moment.

"A man who does not love praise is not a full man," said Henry Ward Beecher; but did not say what effect the praise had on the man who loved it.

As I see it now, the decision to applaud or cry "applesauce!" is not so much a matter of whether the performer likes or dislikes praise. It is entirely a matter of its effect on his work for which we are paying.

For an audience of intelligent folks to pay seven dollars a seat to see a show and then, by withholding applause, put the performers in that unenviable state of mind which prevents their doing their best work has always seemed to me like the process of cutting off your own nose to spite your face!

You are paying for the show. Why not get the most for your money? And to those who, after liberating themselves from the price of a seat, jeer and boo and hiss the actors, I have only the utmost contempt. For, unless they get more pleasure out of the strained situation they arouse than they would out of a perfect performance, I cannot see their wisdom.

EVEN if I do not think a performer is doing as well as he should, *I applaud him;* and by my mental attitude try to get others in the audience to applaud, all to the end that we may all enjoy ourselves more. I know that applause and praise is sweet to the ears of a creative spirit and that hand clapping stimulates an actor to better work if he has it in him.

And if I discern that the performer is so rotten that no amount of praise can bring out of him a presentable act, *I get up and leave.* I do not remain to jeer. I go entirely. For jeers do not help anyone.

(*Turn to page 62*)

# Keller's Field Day

By

E. Bruce Brunson

County Agent, Cheyenne County, Kansas

THERE are two ways of getting information—one, from your own knowledge and experience; the other from the knowledge and experience of others. Henry Keller, Kansas farmer, is a strong advocate of both ways.

Last year Mr. Keller, who is also president of the Cheyenne County Farm Bureau, conducted an extensive variety test of corn on his farm in Lawn Ridge Township. On top of this, after he had satisfied himself with the results, he called in his neighbors and held a regular corn field day all of his own. So interesting did the day become, that there is every probability that some such get-together will become an annual affair. Cheyenne county is one of the best corn counties in Kansas.

*"Demonstrations Convince"*

When Mr. Keller decided upon making his experiment, in addition to the six varieties of corn which were sent out from the college, he secured 21 samples of seed from various parts of Cheyenne county. All of these varieties were adapted, having been grown in the locality for not less than five years. He planted all of this seed, four rows of each, on May 22.

At harvest time and after this progressive farmer decided on holding his field day, he called his friends and neighbors together to profit by his findings. The crowd gathered at the Keller home a little before noon. The home was thrown open, and a fine basket dinner supplemented by barbecued beef furnished by Mr. Keller was served cafeteria style.

After the dinner everyone drove

(*Turn to page* 44)

*Fourteen per cent of the family living from the farm is pork and lard*

# A LIVING

By
C. E. Trout
United States Department of Agriculture

THE farm gives many returns which add to the stability of the family and to the standard of living, but which are hard to measure in dollars and cents. One of the most important of these returns is "the family living from the farm." Many attempts have been and are being made to determine the money value of the part of the family living furnished by the farm.

It has been determined, however, that the farm greatly contributes to at least three essentials of life—food, fuel, and shelter, and that these returns generally do not show on the farmer's balance sheet. The family living from the farm is largely made up of the food products set aside from the year's production and the fuel and house rent furnished directly by the farm.

No farm plan seems complete without its family garden. A part of the day's supply of milk and a part of the day's collection of eggs is used in preparing meals for the family. Other food products go to the pantry, cellar, or smokehouse instead of being sent to town to be sold. The farm woodlot, condemned fruit trees and discarded fence rails and posts furnish fuel for cooking and heating.

*Dairy cattle furnish nineteen per cent of the farm products used by the family*

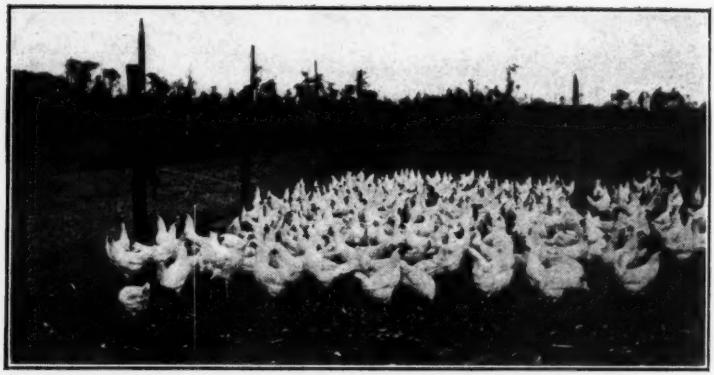
# *off the* FARM

*Helpful information for folks living on the farm.*

These supplies are things that lend safety and stability to farm life. They enable the farmer to tide over hard times that would ruin him if he had to pay cash for everything. In the case of the man on a small farm, this income is often of as great importance to the farm family as the cash income. These perquisites are not altogether free of cost to the farmer. They represent labor and invested capital. The actual money cost, however, is usually insignificant.

Studies of several thousand farms made by the United States Department of Agriculture show that the value of the things the farm family gets from the farm averages about one-third the whole cost of the living for the family. It is about two-thirds of the cost of the food, fuel and house rent. While in 1918 and 1919 when everyone was prosperous, the value of the part of the family living coming directly from the farm was only about one-fifth as much as the farm income; in 1921 and 1922 when the depression was at its height, the living was fully one-third as much as the income, according to H. W. Hawthorne of the Department, who has worked out the meaning of the figures collected on this subject. The information on which he bases his conclusions was collected for the years 1918 to 1922.

All sections of the country were



*Poultry and eggs furnish eleven per cent of the living*

represented in the figures. Dairy farms in the hills of New England and in Wisconsin, the cotton plantations in the southern states, the citrus groves and early truck farms of Florida, the orchards of the Shenandoah Valley in Virginia and near Niagara Falls in New York, the grain and livestock farms of the Corn Belt, grain farms and grazing in the Great Plains region, extensive wheat farms in the Palouse country of Idaho and Washington and in northern Oregon, and farms under irrigation in the West and Northwest are all represented in the data.

The importance of the living from the farm is brought out by its actual value in money compared to the cash income from the farm. The families in Washington county, Ohio, Tama county, Iowa, and the Palouse country of Idaho and Washington had but little more cash to spend than a sum equal to the value of the family living from the farm in 1921 and 1922; while in the more prosperous years, 1918 and 1919, the families in Washington county had more than twice as much as the value of their family living from the farm to spend in cash, and the families in Tama county and those in the Palouse country had more than seven times as much.

(*Turn to page* 49)

*The farm furnishes* $14 *worth of fuel to the family*

¶ *This is a timely problem. Read this authority's experiences.*

# Top-Dressing Alfalfa

By A. R. Albert

Supt., Hancock, Wisconsin, Experimental Farm

THE necessity of growing a legume biennial or perennial hay in order to maintain the productivity of sandy soils is generally conceded.

Alfalfa is, of course, recognized as QUEEN of ALL HAYS for dairy cows. There is also no longer any dispute as to the importance of liming sour sandy soils before even attempting to secure stands of alfalfa. Having applied the lime, it still remains necessary to apply a top-dressing of manure in order to supply the quickly available plant food required by the alfalfa seedling until the nodules can develop upon the roots and perform their function.

The application of manure, while desirable, is not as important as the lime if the soil is in a fair state of fertility or if the field has already been in alfalfa or sweet clover. In connection with what follows, we must bear in mind that manure is a rather good potash fertilizer although most of the stress has been placed on the nitrogen it contains and to a smaller extent on its phosphorus.

In order to retain an established alfalfa stand for a considerable time, top-dressing with manure has been generally advocated, frequently with no consideration for the crying needs of the balance of the farm for the precious manure (speaking now and hereafter of the light soils). Even though we have known that we might use the alfalfa crop as the nitrogen collecting agency for the farm, we have not been fair in providing the crop with balanced working equipment so that it could collect yet more nitrogen.

Sometimes the attempt is made to do so through manure with the result that along with the phosphorus and potash in the manure, we have also applied the nitrogen, which the alfalfa crop could have secured from the air, while at the same time other fields and crops on the farm have stood in the direct need of just such a complete

fertilizer as manure.

In order to determine what might be expected from the use of phosphates and potash when applied as a top-dressing on alfalfa fields, the writer began an experiment in 1922 and revised this in 1923. The results of this latter test are presented in this article, but have also served as a basis for still more comprehensive work which was begun in 1925.

An alfalfa stand had been established in 1920. Lime had been applied in 1919 and manure disked in before seeding. The stand was the best ever secured up to that time on the Hancock Farm. Yields were mediocre, however. Hay was cut once in 1921 (dry season) and twice in 1922.

EARLY in spring, 1923, the most uniform patch of alfalfa was selected and one application of the treatments shown below was made with a fertilizer drill. The yields of thoroughly cured hay are given by seasons. Nineteen hundred and twenty-three was another very dry year so that yields were secured on only one cutting although three were made. The second and third were even smaller than the first.

*Yields of Well-Cured Alfalfa Hay in Lbs. per Acre*

| Treatment | 1923 | 1924 | 1925 | Total |
|---|---|---|---|---|
| None .... | 806 | 2680 | 2327 | 5810 |
| 300 lbs. 0-16-0 .. Acid Phosphate | 797 | 2920 | 2523 | 6240 |
| 300 lbs 0-16-10 . 150 lbs. Muriate of Potash ..... | 960 951 | 3180 3440 | 2829 3328 | 6970 7720 |

There was a barely profitable return from the acid phosphate treatment which would cost about $3.75. When 10 per cent of potash was added to the phosphate, there was an increase of 1160 pounds of hay with a treatment costing $6.45. The increase for the potash alone was 730 pounds and it was brought about by the addition of $1.50 worth of potash to the phosphate. With the heavier 150 pound application of muriate of potash costing about $3.75, an increase of 1900 pounds of hay resulted.

We must accordingly conclude that potash alone will give splendid returns, but that phosphate and potash combinations will prove still more productive. A tentative proportioning of the two would seem to require from ½ to 1½ times as much potash as phosphoric acid depending on the degree of sandiness of the soil. The lighter the soil the greater should be the proportion of potash. The rate of application would vary from 300 to 500 pounds per acre depending on how frequently the applications were made, and when and how heavy manure applications were or are to be made.

The application should be made the year after the stand is established, so that the crop may derive benefit from it during the second and subsequent years. Be it observed that the effect upon the first cutting after the application was small indeed, and that the effect the third year was considerable.

In this connection it becomes clear that the total effect of a fertilizer application may extend over a period of three years or more, and disappointments await those who look for too immediate returns. In the case under discussion, the third year's effect was upon the fifth crop from this stand and was due in a large measure to reduced winter killing during the severe winter of 1924-25. Had the entire field carried

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*Rogueing potato field incident to certification*

# Profit — $269 *per* Acre

By

Sam D. Preston

County Agent, Rappahannock County, Virginia

IN the plans for the agricultural development of Rappahannock county, Virginia, there is one paragraph which reads as follows: "To double the yields per acre during the next five years, through the proper rotation of crops, in which one legume is to be used in each rotation, and by the increased use of lime and high analysis fertilizer."

This plan has been in operation only two years but there are some striking results to the credit of a number of demonstrators who have been busy trying to make the plan a reality. Not only have good results been obtained with potatoes, but many that are almost as striking have been gotten on corn, wheat and apples.

One of the most successful growers under this plan is C. D. Wood, Flint Hill, Va., who seeded one acre to certified V.P.J. Green Mountain potatoes last spring. He used 1800 pounds of 5-8-5 fertilizer, drilling it all in the row and mixing well with the soil before

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# *EFFICIENCY—*

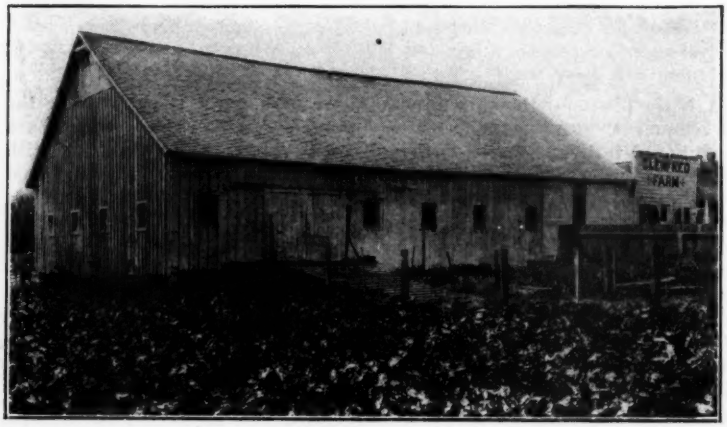
By

*Arthur P. Chew*

United States Department of Agriculture

WHEN I was a boy I worked for a succesful and scientific wheat farmer in the Red River valley of North Dakota. This man farmed 320 acres with exceptional efficiency. There was hardly a wild oat on the place, although the surrounding country was thick with them. In a one crop region he was a pioneer in mixed farming. He had purebred stock, fine barns and equipment, and well laid out fields. He put in experimental plots for the state agricultural college. It was said of him that he could make money in years when most farmers thought themselves lucky to keep out of debt.

I WAS in the habit of sending short pieces to a country newspaper, and I thought an interview with my boss might go well. You know the sort of thing. "Tell me, Mr. So and So, what you consider the secret of your success." Then the interviewed person relates how in his early days he worked longer and studied harder than other fellows; how he learned



*A Tillamook county barn before efficiency*

# *and then* WHAT?

*¶Can we be too efficient? See what this thinker thinks.*

the importance of thrift and of industry; and how he got in the way of taking time by the forelock. Usually the narrative is sprinkled with anecdotes illustrating the brains and foresight of its hero. It is apt to wind up with the admonition, "Go thou and do likewise."

THAT wasn't the line my employer reeled off when I finally got him talking about himself. He might have done so with more justification than some successful men have when telling the story of their life. He had unusual ability, capacity for work, and character. But he also had a rare humility, that made him look without as well as within for the reason of his success in farming. And so, instead of attributing it primarily to his own energy and brains, he attributed it largely to the lack of those qualities in others.

"Do you see Brown's farm over there?" he said, pointing as we rode on a load of sheaves to a run down, weedy, ill-tended place whose owner was never more than two

*A Tillamook county barn after efficiency*

jumps ahead of the sheriff. "It is farms like those that explain the extra profits of farms like mine. If every farmer ran his business as I do mine, the profits I get from raising cleaner and better wheat, and from carrying out a balanced production program, would be wiped out by lower prices. Efficiency in farming, as it becomes general, benefits the consumer more than it benefits the producer, because increased facility in production nearly always means more production and more production means lower prices."

THAT didn't seem very promising for my interview. In fact I thought my boss, who had a sense of humor, was joking. It upset all my notions of farming to be told that increased efficiency all round wouldn't necessarily mean increased profits for farmers. My employer, anticipating Einstein, began to talk about relativity. "Efficiency in farming," he said, "is a relative term. We call one man efficient by contrast with another who is not. But suppose we were all on the same level. How would you measure efficiency then? And what would our profits be? They would be just enough to keep us going, because every time they rose above that point increased production would bring them down. That is all agriculture as a whole gets now. The return to individual farmers, however, varies with their efficiency. That is where the idea starts that increased individual efficiency will solve all the problems of agriculture. There is no greater delusion."

In the 15 years that have passed since that talk, events have supported its main idea. Take a bit of evidence furnished by the Department of Agriculture. In the last decade or so the efficiency of the average American farmer, as measured by production per man, has gone up 15 per cent. But has the prosperity of agriculture increased proportionately? Not at all. Our farming business, speaking generally, was more prosperous before this increase in efficiency took place than it has been since. Farm earnings from 1896 to 1916 were unusually favorable. There is no prospect that the decade from 1916 to 1926 will show an equally good average result, despite the big returns that were made in the first few years of it.

WHAT conclusion are we to draw from this fact? That efficiency in farming isn't worth while? No indeed. Every wide-awake farmer knows he can't afford to be behind in the race for efficiency. When a man's production costs are materially above the average in his line, he is soon forced out of business. On the other hand, the profits made by those who are ahead of the procession furnish a standing demonstration that efficiency, under certain conditions, pays dividends. The lesson to be drawn from the fact that increased efficiency in agriculture as a whole has not always meant increased general agricultural prosperity is simply that what works out for the individual does not always work out for the group. Efficiency by itself, in other words, is not enough to ensure a prosperous agriculture.

My North Dakota employer 15 years ago knew why. When farmers increase their efficiency, they don't all do it at the same time and in the same degree. Those in the lead make special individual profits, derived from the margin between their production costs and the costs of farmers generally. But

(*Turn to page 52*)

# Dewberries

By

A. E. *Schilletter*, Extension Horticulturist

Clemson Agricultural College, South Carolina

DEWBERRY culture—either as a phase of home gardening, with perhaps an eye to local sales from the surplus over household requirements, or as a commercial enterprise—engages just now the interest of many South Carolinians, especially in regions traversed by the long Sand Hill ridge.

Dewberries have increased from about 20 acres to more than 400 acres in the past three years. Chesterfield county, with 140 acres has by far the most extensive plantings although the dewberry industry there is small as yet compared with that in the same range of fruit hills farther north—in Moore county, North Carolina.

The plan is for a group of neighbors, 10, 20 or 30, to plant two to ten acres each, not enough seriously to embarrass the individual if the crop should not turn out so well as is hoped, yet sufficient in the community to benefit by carlot cooperative handling.

Lucretia is the only variety of the dewberry grown commercially in the Southeast. It was introduced about 35 years ago, having been developed in West Virginia. The dewberry is a sort of trailing blackberry, which in the wild state propagates itself by the tip-

rooting of the vines, while the blackberry forms new plants by suckers. The fruit is very much like that of the blackberry, but of distinctive flavor. The root lives 12 to 15 years in full vigor, but the canes on which the fruit is borne live only two seasons.

DEWBERRIES will grow on poor but not on wet soil, an elevated site is desirable for air drainage, and though a clay loam will serve, the commercial plantings are mostly in coarse sand or sandy loam, some of the most profitable over clay subsoil. Humus is necessary and liberal applications of high grade fertilizer pay well. These conditions, and the fact that the same plants remain in the ground for years, dictate a thorough fitting of the land before the plants are set. The planting of dewberries on ground which has not been at least a couple of seasons in cultivated crops is not recommended. One or two cover crops before dewberries yield excellent results. Fairly good dewberry production may be obtained from any well drained fertile soil well supplied with humus to retain moisture.

Plants may be set in this latitude either in winter or early spring. Winter sets will bear a light crop the next fruiting season. The soil should be firm, to prevent the drying out of the roots and enable them to draw at once on the soil moisture. The commercial practice in the Southeast is to set the plants 5 by 5 feet apart in checks, or 6 by 6 feet. The latter spacing facilitates cultivation and intercropping. Thorough cultivation is advised until the canes become so long as to interfere with plowing. Fertilization with a high grade mixture, rich in phosphoric acid, has been found uniformly profitable.

Intercrops of early vegetables that require frequent cultivation may be grown during the first season—lettuce, radishes, and early cabbage, for instance; but intercrops maturing later than the first of August can not be safely attempted, because by that time the young canes will have spread considerably and at this state they are easily injured. During the time when cultivation is practicable at all, it must be frequent; once a week when weather allows, but not more infrequently than once every 10 days.

During their first season, the vines are allowed to spread over the ground, but early in the following spring, before the canes become brittle they are tied up to stakes. A 2 or 3 inch pine stake, 7 or 7½ feet long is driven alongside each plant so that 5 feet or more is left projecting. The handler, wearing gloves to protect him from the thorns, gathers up the vines in a lose sheaf and wraps them spirally about the stake, a helper tying them in three places, with a strong but soft twine. The ends of the canes are then cut off about 6 inches above the upmost tie.

AT the last cultivation preceding the tying up, some growers sow a cover crop broadcast, to be turned under the following spring, or drill one or two rows of cowpeas between the dewberry rows to protect the canes during the winter, add humus to the soil, and prevent washing by heavy rains.

Successful North Carolina growers are using very heavy applications of fertilizer.

As soon as the plants have become established and are 2 or 3

(*Turn to page 56*)

# *Kentucky* Blue Grass

By J. W. White

Soil Research Chemist, Pennsylvania State College

*¶Start this unusual series with this — the first story.*

THE purpose of this series of articles is to present in a brief manner some of the more important facts gleaned from a detailed study of pasture problems in the Keystone State. The subject matter deals primarily with Kentucky blue grass concerning which we have heard so much in song and story and so little from our experiment stations.

Previous pasture studies of the experiment stations have dealt largely with the rejuvenation of old pastures of extensive acreage in an attempt to stimulate the growth of existing grasses which vary in species and nutritive value in accordance with the particular soil conditions. Little attention has been given to the development of highly productive Kentucky blue grass pastures on land similar to that now occupied by cultivated crops.

Our lack of knowledge, therefore, concerning the economic value of intensive pasturage has been responsible for the general belief that the more fertile type of farm land can be utilized to better advantage in a rotation system. The data furnished by the Pennsylvania studies throw a new light on the subject and lead to the conclusion that highly developed Kentucky blue grass pastures are worthy of a more prominent place in the economic scheme of farm management.

SOME years ago the writer had the pleasure of a visit at the Kentucky Agricultural Experiment Station, located in the heart of the famous blue grass region. My genial host took great pride in acquainting me with many things (not all for this was prior to 1918) which have contributed to the everlasting fame of old Kentucky.

We first visited a famous dairy farm, located a few miles from the

college station. Here we saw the last word in Jersey cattle—more than 1,200 head of purebred stock including several hundred milking cows, their udders taut with the product of the blue grass pasture.

WE next were privileged to pay homage to Lady Viola, the queen of the Elmendorf herd, a little Jersey wrapped in a costly blanket, groomed no doubt to the queen's taste, and attended, as it seemed to me, by a retinue of mere men. I doffed my hat to her, the ultimate, the last word of her kind. They told me she was valued at $15,000 and that there was a standing offer of $1,000 for each little princess offspring. As I listened to her illustrious record told by her chief attendant the words of the song "She was Bred in Old Kentucky" ran through my confused mind.

In a near-by enclosure we saw the monarchs of the herd, three wonderful sires, valued at $50,000, made doubly attractive to me by the presence of a strong fence between us.

AFTER lunch we visited several of the famous stables of Lexington. There one by one, the real pride of the blue grass country, the Kentucky thoroughbreds, were trotted out before me, each one doing his stuff—a magnificent sight, the fitting climax of an eventful day. But what has this to do with Kentucky blue grass? —everything; for is not the value of raw material judged by its finished product?

During the morning as we drove over the Elmendorf Farm I could not but contrast the beautiful prairie country abounding in a luxuriant growth of native blue grass, with that of the so-called pasture land of the states northeast of the great open country, and among them the Keystone State, if you please. I thought of our own 4,000,000 acres of Pennsylvania grazing land, a large portion of which is too rough for the plow and too steep for the cow, embracing as it does 33 per cent of the total "improved" farm land of the State.

THOUGHT of the great Volusia hills of the north tier counties which in the early spring give promise of ample pasture, but turn too soon from green to brown. I pictured the Holstein cow, the favorite up there, trying in vain to get her fill and at the same time keep her balance on the sloping hill.

Compare, if you please, the fortune of the little Jersey of Elmendorf, grazing contentedly kneedeep, perhaps, in succulent blue grass with the fate of the big Holstein, the one turning the rich nutrients into milk and the other into energy. The former grass fed the latter stall fed.

Why not also the level and fertile land for the Pennsylvania Holstein, and return the rough steep hillsides again into forest? And this is the theme of my story.

IN the succeeding issues of BETTER CROPS the following topics concerning Kentucky blue grass will be briefly discussed: (1) Nature of Pennsylvania Pasture Experiments, (2) Nutritive Value and Adaptability to Soil and Climate, (3) Response to Fertilizer Treatment, (4) Carrying Capacity and

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# Drugs *for* Bugs

*Flat Grain Beetle*

By Don B. Whelan

Entomologist, University of Nebraska

HAVE you gassed your bugs yet? If not, don't use formaldehyde. Formaldehyde is excellent in removing odors from dishes, refrigerators, and rooms as it acts chemically upon evil smelling gases forming others that have no odor. It is also useful in killing those minute bacteria, or "germs," that cause disease. But if you wish to kill insects don't use formaldehyde.

Formaldehyde itself is a gas having a very penetrating odor which is intensely irritating to the eyes, nose and throat, but generally speaking it is not a poison. Formaldehyde gas is bought by the pint, quart or gallon but not in the gaseous state. It is purchased as a water-white liquid and the odor disappears in the dilute form in which it is generally used.

Like ammonia formaldehyde is a solution of a gas in water and often sold under the name of formalin. When used in fumigation it has many desirable qualities, as it will not corrode metals, as sulphur does, with the possible exception of unpolished iron and steel. In fumigating a house after diseases it will not bleach or injure household fabrics, or highly colored wall paper.

If used in fumigating insects in stored grains very inferior results may be expected from formaldehyde as the hard shelled little pests do not die very easily. The weevil in beans and peas will doubtless outlive the efficiency of such control measures. The less hardy clothes moths do not seem to be affected by the gas.

Scientists have tried many experiments to determine whether this material would kill insects. Results show that very few have been killed even when unusually large quantities of the gas were liberated in an air-tight space.

The Public Health and Marine Hospital Service reports that formaldehyde did not possess insecticidal properties against mosquitos. Other experiments have

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# WHAT

# *Is Land Worth?*

By Dr. Robert Stewart

Dean, College of Agriculture, University of Nevada

SECRETARY JARDINE recently said, "The American Farmer is a business man. He has greater capital investment than the average retail merchant. His business is vastly more complex than that of the average retail merchant."

There is a general agreement among agricultural leaders with the statement that the farmer is a business man. The full significance of the statement, however, is not fully realized.

WHAT is really meant by the statement that the farmer is a business man? Does it imply that he has large capital invested? Does it simply mean that he now buys and sells as does a retailer?

Formerly the farmer produced only that which he consumed himself; he had little to sell and less need to buy. The farmer now uses raw material and converts it into a finished product which he sell; as a business man, he is, therefore, comparable with a manufacturer rather than with a retailer.

In any successful manufacturing enterprise economic production is the first essential to success. If the cost of production is too high no possible system of marketing will succeed.

IN agriculture, the four factors of production are land, capital, labor and management. The right use of land, capital and labor by management makes for efficient production. Whether it costs $0.50 or $2.50 per bushel to raise wheat depends largely upon the *yield per acre.* No possible system of marketing wheat or price fixing will save the wheat farmer who produces only 8 or 9 bushels per acre.

The agricultural value of land, therefore, should be determined largely upon its ability to produce per acre. The yield of wheat in the United States as an average of the past five years is 14.2 bushels per acre. During the same period the average farm price was

$1.04 per bushel. What is the actual value of land which produces 14.2 bushels of wheat which sells for $1.04 per bushel? The gross value of such a crop is $14.77 per acre.

THE actual cost of producing crops varies within very wide limits not only on different farms but even on the same farm. In 1919 a government survey in the wheat belt indicated that the cost of producing wheat among 481 farmers varied from $1.00 to $5.00. A large corporation in California which keeps a very accurate record of cost of production found a very wide variation in the cost of producing barley even during a single year on different fields. The yield of barley on the several fields varied from 983 pounds to 5181 pounds per acre while the cost of production varied from $0.31 to $0.45 per hundredweight.

It is fully realized, therefore, that average cost of production data can be applied to individual farms only with grave danger, yet some calculations may be made so as to bring out certain principles which are sound.

The average cost of growing a wheat crop is $5.70 per acre for such necessary operations as plowing, harrowing, disking, seed and seeding. The average cost of harvesting and marketing the crop is $3.00, interest, depreciation on machinery, etc., $2.00. The average taxes on such land are $0.41. The total annual expense of growing wheat on such land not considering interest on the land is therefore $11.11. The land has returned $3.66 above cost of growing, which is five per cent interest on a land valuation of $73.20 per acre. If land which is used for wheat production produces the average yield of wheat and has a greater valuation than $73.20 per acre, the farmer is not making cost of production; if it has a less valuation he is making money.

SUCH data as this should not be taken as absolute but only as an indication of the basis upon which the value of land should be determined and calculations made.

It is important to emphasize the need of growing large crops. The statement is frequently made that the farmer cannot afford to grow

*Sweet clover on soil rich in native limestone*

large crops for he gets less for a large crop than he does for a small one!

For example, Ely and Morehouse in a recent statement say, "A general good season may bring a bumper crop, a fact that is heralded by the metropolitan press as a sign of prosperity of the farmers and the nation. As a matter of fact a bumper crop usually brings ruinously low prices."

However, two potato growers of Salmon, Idaho, last fall sold their large crop of potatoes from 200 acres for $143,100, while a potato grower of Oakley, Idaho, produced an $800.00 an acre crop on a 75-acre field.

Whenever all growing conditions are extremely favorable and a large crop of any commodity is produced by everyone, the inefficient as well as the efficient, the composite *Farmer* does receive less for his large crop that he would for a smaller one.

The real problem, however, is for the *individual* farmer to study his methods of production and so control his production as to produce individually high yields all the time and thus reduce his cost of production as compared with the average of the neighborhood.

If the wheat farmer by a practical method of soil treatment is enabled to increase the crop producing power of his soil by the purchase of additional raw material as fertilizer and converts this into a finished product he may make money.

IF the yield of wheat is increased to 20 bushels per acre, the cost of plowing, harrowing, disking, seed and seeding remains the same, or $5.70 per acre. The cost of marketing and harvesting is perhaps $4.00, the depreciation on machinery is still $2.00, while taxes have increased to $0.97; the total annual expense is $12.35, while the total income is $20.80. The land has produced a return of $8.27 which is five per cent on a valuation of $165.45.

ON land producing 30 bushels of wheat the cost of growing the crop is still the same, $5.70 per acre, while the cost of marketing and harvesting is $5.00; interest and depreciation $2.00, and taxes are $1.66. The gross value of the crop is $31.20. The total expense is $14.36. The land has produced a return of $16.84 which is five per cent on a land valuation of $336.36.

On land producing 40 bushels of wheat per acre the growing cost is $5.70, the cost of harvesting and marketing is $6.00, interest and depreciation $2.00 and taxes $2.54 per acre. The total cost is $16.24, while the gross return is $41.60. The land has produced a return of $25.36 which is five per cent interest on a land valuation of $507.27.

From this basis the individual farmer not only can afford to grow large crops but he can not afford to grow anything else.

The problem then becomes one of so treating the soil as to secure the larger crop in an economic manner. There is now ample evidence from experimental station results to show that this can be done.

For example, the yield of wheat on the thin, cold soils on Strongville Farm of the Ohio Experiment Station without treatment averaged 13.09 bushels per acre as an average of 13 crops, which compares very favorably with the average yield of wheat in the United States. An application of 160 pounds of acid phosphate; 80 pounds of muriate of potash; 60

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# Brains

## *and*

# "Bone Dust"

*The Champion—John Barnes, Jr.*

By J. C. Allen

Purdue University, Lafayette, Indiana

GOOD seed, fertile creek bottom land, lots of hard work at the proper time with suitable implements, and 200 pounds per acre of "bone dust" (0-12-6) make John Barnes, Jr., of Brooksburg, Indiana's Champion Corn Grower for the 1925 season. The awards were announced at the recent Agricultural Conference at Purdue University and Mr. Barnes won the highest honors by producing 143.99 bushels per acre on a 5-acre plot. Telling how he did it, Mr. Barnes said:

"There were 11 acres in the entire field, which is flooded with the back water from the Ohio river that deposits sediment each year and maintains or even increases the fertility. This particular field has been planted to corn each year as long as the oldest resident can remember and this is the first year that any commercial fertilizer or manure has been applied.

"My son Loren entered five acres in the same field which averaged 129.19 bushels per acre. The only difference in the method of handling these two 5-acre plots was that I applied 200 pounds per acre of 'bone dust' with a wheat drill the day before planting." (Bone dust seems to be a common term in sections of southern Indiana and Kentucky, meaning a mixed commercial fertilizer.)

"THE difference in the yield between the two plots of 1.8 bushels per acre must be attributed to this fertilizer which brought my five acres up from the 129 bushel per acre class to the 144 bushel per acre yield and entitled me to the honor of being Indiana's Champion Corn Grower of 1925."

(*Turn to page 55*)

*Check plot*

100 *lbs. nitrate*
200 *lbs. acid phosphate*
75 *lbs. potash per A.*

# Potash *and* Cotton

"YES, I believe we are discovering something good" announced County Agent A. J. "Pete" Renner as he forced his typical county agent flivver along the twisting sand roads of the southeastern corner of Scott county, Missouri. "We'll have time to take a look today. I want you to see something that you won't be apt to believe. The Presiding Judge of our county court is carrying on an experiment with fertilizers on cotton on his farm on the other side of the county near Morley that shows an increased yield of nearly 400 per cent from the use of potash. Of course, this field is on a particular kind of soil—muck or glade land, a black sandy loam—and the results there will not necessarily apply to the whole district."

After an hour of driving through a scorched and dusty countryside, scorched from a summer with only one rain, we pulled up alongside a field of cotton very uneven in appearance. Part was a fresh vigorous green, part had lost all its leaves, with the rest of the field presenting all shades of gradations between the two extremes. A large sign notified the passerby that this was an experi-

*200 lbs. acid phosphate*
*75 lbs potash*

*75 lbs. potash*

# *on* Missouri Glades

By *Cannon C. Hearne*

State Extension Agent, University of Missouri

mental field of cotton being conducted on the farm of R. L. Harrison by the College of Agriculture in cooperation with Scott county under the direction of County Extension Agent A. J. Renner.

Renner first had me walk down the road across the end of the rows. "See if you can tell where one plot leaves off and the next begins", he instructed. Even the most casual observer could spot the places to the exact rows for differences were very marked in height of plant, stage of maturity, and quantity of cotton.

"Now then, over the fence", was the next order. In the field we examined all the plots with care. Renner then volunteered the information that I had been waiting for.

This black sandy type of lowland soil—commonly called glade—is rather common in the alluvial district of southeast Missouri. It is a muck like soil formed back in the days when all these lowlands were a part of a great swamp area. The Mississippi River in geological ages flowed many miles west of its present bed. As it gradually moved eastward it left a broad level delta-like bottom which became swamp from hill-runoff and back water from the river. Large areas were gradually formed into this glade land on which the Judge's land was located. The years of farming this rich virgin land have tended to reduce the original fertility until a need for some fertilizer for maximum profitable cotton production was

felt. A rust trouble has also developed so that yields have been materially reduced.

In 1924, a fertilizer experiment was planned so as to bring out the effect of various treatments. The experiment was placed on the Harrison farm on the east and west base line road near Morley where it could be seen by hundreds of farmers each month. Judge Harrison was selected because of his recognized leadership and because he had been at one time a surveyor and was used to doing things accurately.

FIVE plots were used. Each plot consisted of exactly one-half acre of land and all were planted to the same variety of cotton and received the same treatment in every way except in the application of fertilizers. The two end plots were left untreated as checks.

Plot number two received a treatment of acid phosphate at the rate of 316 pounds per acre.

Plot number three was treated with acid phosphate at a rate of 250 pounds and muriate of potash at a rate of 40 pounds.

On plot number four, 62 pounds of muriate of potash was used.

These plots were all planted about May 15 but a severe sandstorm necessitated a second seeding on June 2. Observations were taken thereafter each week.

A boll count was made in September, 1924.

| Plants | Plot | Bolls |
|---|---|---|
| 189 | First check | 501 |
| 164 | 316 pound phosphate | 389 |
| 160 | Phosphate-potash | 805 |
| 135 | 62 pounds potash | 871 |
| 143 | Second check | 320 |

One hundred and twelve per cent increase was indicated for the straight potash area with a 96 per cent return on the combination plot of acid phosphate and muriate of potash. Thus far there seemed to be a heavy profit in the use of the proper fertilizer. Boll counts are not enough however, since it is the cotton in the gin that is paid for by the buyer.

On October 15, the field was picked with the above results. After subtracting the price of the fertilizer from the amount of the cotton sold from the first picking, the muriate of potash had increased the value of the cotton $2.68, while the muriate of potash-acid phosphate treatment showed a profit of $4.28. However on the

(*Turn to page* 60)

*75 lbs. potash* *Check*

*These cows work for Mr. Critchlow*

# Lee Critchlow, Hustler

By
*Hugh Fergus*

Slippery Rock, Pa.

IN 1915 when Lee Critchlow bought his first farm he hardly expected that within 10 years he would have sold it, bought another, sold it, and finally bought the one he is on now. But it seems as though kind Providence was guiding his destinies for on his present location he has the prospects of having one of the best 60-acre farms in western Pennsylvania. In spite of the fact that it was run down when he bought it three years ago and some of the soil he plowed last Fall for this year's corn crop showed yellow subsoil at less than six inches of depth, Lee and his wife had a labor income of close to $2,000 for 1925.

Lee was raised on a farm, one of 13 children. This was where he acquired his liking for farming, even though his father and mother wondered sometimes how they were going to make both ends meet and raise their flock of 13.

WHEN he got large enough to earn money Lee worked in the oil fields. However this work was too irregular and by the time he was married and he and his wife had decided to try farming they had only $300 capital.

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# Woods to Washington

By

C. E. Gapen

Chief, Press Service, United States Department of Agriculture

DR. ALBERT F. WOODS, president of the University of Maryland, long an active factor in the improvement of American agriculture, has been selected by Secretary Jardine to fill the position of Director of Scientific Work, made vacant last August through the resignation of Dr. E. D. Ball. Dr. Woods will continue in his present work at College Park until the end of the school year. Dr. Raymond A. Pearson, president of Iowa State College, will succeed to the presidency of the Maryland school.

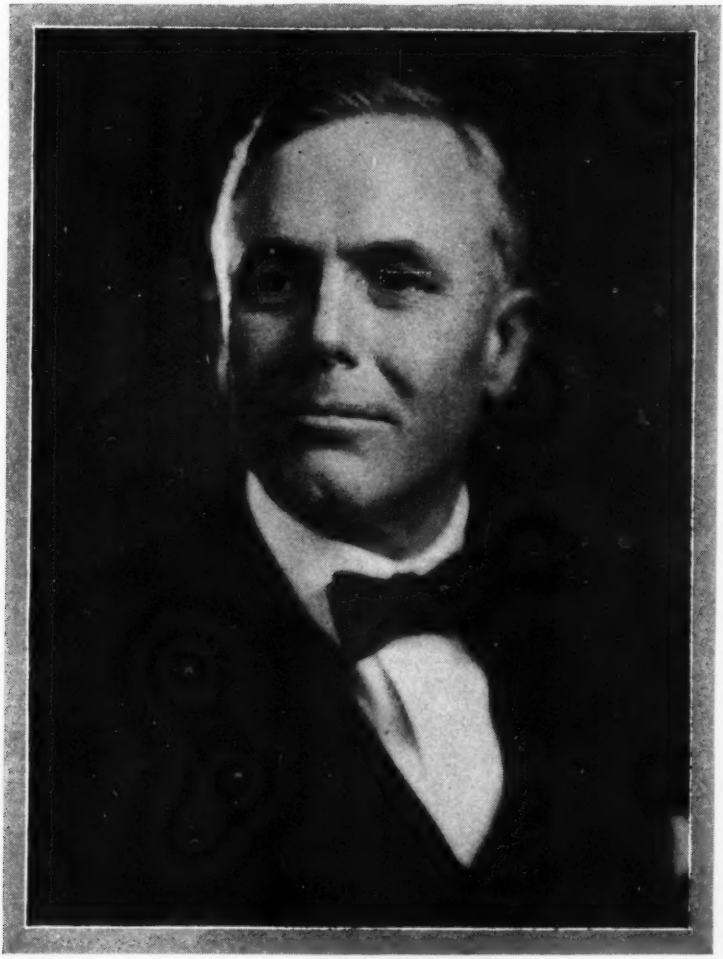
In common with a number of other men drawn into important posts in the department, the Secretary included, Dr. Woods comes to a place made familiar by earlier association. He spent 17 years in the Bureau of Plant Industry, rising from assistant pathologist in the Division of Vegetable Pathology to assistant chief of the bureau, which position he held in 1910 when he left to become dean of the college of agriculture and director of the experiment station at the University of Minnesota.

Until 1921, however, he still acted in a consulting capacity with the department giving great assistance in the development of plant-quarantine policies. He became president of the old Maryland Agricultural College and executive officer of the State Board of Agriculture in 1917. Three years later this school and other colleges were merged with the University of Maryland and Dr. Woods became president of the enlarged institution.

Dr. Woods was born at Belvidere, Illinois, in 1866. He attended the University of Nebraska where he received the bachelor of science degree in 1890 and master of arts degree two years later. He is the author of many technical articles and reports and is a member of numerous scientific societies. He has been a delegate to important conferences in other countries, including the International Institute of Agriculture at Rome. He was for a time president of the Association of Land Grant Colleges.

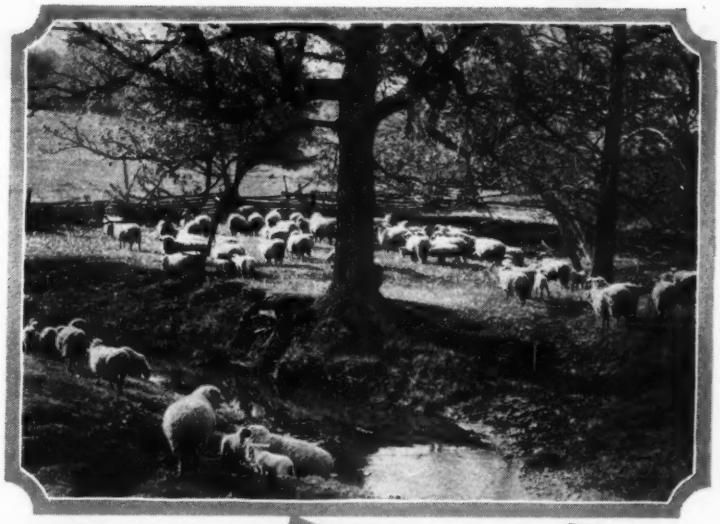
In selecting his new Director of Scientific Work, Secretary Jardine said: "Doctor Woods has a broad understanding of agriculture in this country. As president of the Association of Land Grant Colleges and in numerous other capacities he has been in intimate contact with scientific work in American agriculture and is eminently fitted to coordinate the scientific activities of the Department of Agriculture and the state agricultural colleges and experiment stations."

# Better Crops' ART GALLERY of the month



Dr. Albert F. Woods
Director of Scientific Work, United States Department of Agriculture

Spring would be but gloomy weather



**If we had nothing else but Spring**—*T. Moore.*

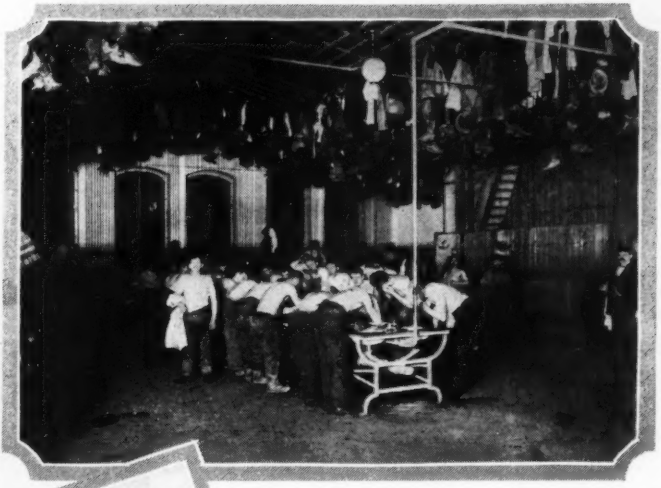
# Farming in

This Normandy cow won high recognition for two years, when exhibited at the Paris show.

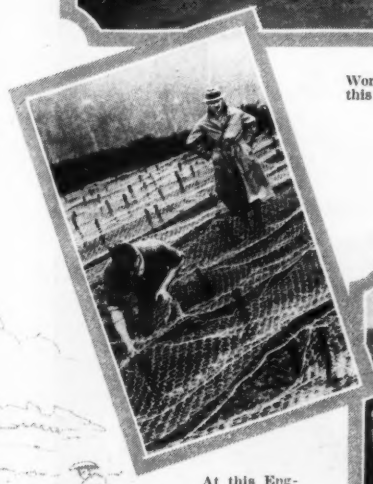
This steep roof shelters a Danish farm family and a herd of Red Danish cattle.

A Swiss farmer carrying his load of Swiss Cheese to market. The making of this tasty cheese is one of the chief industries of Switzerland.

# other Lands



Workers in this potash mine in Germany enjoy this chance to remove the day's grime before going home.



At this English Forestry school young trees are protected by wire netting.

Scientists are at work in England on means for combatting the tomato spider. This pest causes losses to English growers amounting to $150,000 a year.

Our chance to print a picture of "Red Grange of football fame. Here he is with Luther Burbank, the plant wizard.

I. A. Abbott, Grand Island, Nebr., is regarded as the biggest farmer in the world. He weighs 610 pounds and stands 6 feet 10 inches.

Former Senator Fred Du Bois and Senator Borah from Idaho looking over some prize potatoes from their home state to be cooked for an Idaho banquet.

# The Editors Talk

*One who is ignorant of the history of science is ignorant of the struggle by which mankind has passed from routine and caprice, from superstitious subjection to nature, from efforts to see it magically, to intellectual self-possession.—John Dewey.*

NAMING FERTILIZERS

The plant nutrients commonly supplied in commercial fertilizers are three:—nitrogen, phosphorus and potassium. These names mean three elements:—that is, in each case, the simple substance not combined with any other substance.

These elements never exist singly,—only combined with other substances as compounds. In common fertilizer usage, therefore, the names of the compounds of these elements are often used. The percentage of nitrogen for instance is often expressed as its compound ammonia; phosphorus as phosphoric acid or in some countries as phosphate of lime, and potassium as potash and sometimes as other compounds as the chloride or sulfate of potassium.

But it is the simple substances—the elements—that are the plant nutrients, and that give the fertilizers their value.

Thus the question arose, particularly during the life of the late Professor C. Hopkins and since,—why use the names of the compounds? Why not always use the names, nitrogen, phosphorus and potassium?

In the case of nitrogen, in some states, this step has already been taken; the name of the compound ammonia cannot be used. The percentage of nitrogen must appear as nitrogen. Thus the fertilizer analysis may contain the name of one element—nitrogen —and two compounds.

Confusion is also sometimes caused by the form of the analysis. In the South phosphoric acid is placed first, nitrogen or ammonia second, and potash third. In the Northern States the

first two are reversed. Again the question arises, why not have uniformity?

This possibility is being actively discussed. It is inevitable that greater efforts will be made to achieve a higher degree of uniformity in fertilizer nomenclature. No one will deny that simplification and uniformity are adding dividends to business in all directions. Can extra dividends be added in these cases? Or is present common usage of greater importance?

A great deal has been accomplished to improve practices in the use of fertilizers. These questions also demand careful study.

*"Life is good when in the world we are a necessary link, and one with all the living."*
*—Maykov.*

TAXATION A big stride in the right direction was made by the State of New York when it set out to match the reduction in the federal income tax with a like reduction in the state income tax. If there were more of such effort on the part of state legislatures to follow the federal government's program of economy, we would hear less of the recurrent cry from Agriculture for relief from the burden of taxation.

While it may be that the income tax reduction will not relieve the tax burden of a great many farmers—their burden being the property tax—it should open the eyes of every property holder. Taxes on farm property in the United States increased approximately 140 per cent from 1914 to 1923. The value of farm products, however, in 1923 was only 58 per cent more than in 1914, while the net business receipts of farmers were little if any greater in 1923 than in 1914. Of this tax burden approximately 4/7 went to satisfy state and local demands.

Plenty of room for complaint—but, whose fault is it? Who put impractical legislators in position to dig into our pocketbooks for money we can ill afford to spend? Who sponsor large appropriations which become so difficult to pay? It is high time the voters realize that they have the upper hand in this game. The recent income tax reduction should start a wiping of complaining tears, a dusting of mental cobwebs, and a determination to carry wise and practical taxation economy to the place it should start —home, the local and state governments.

*The Scientific method must ultimately spread out to every human affair.—H. G. Wells.*

SNOW FIGHTING In Minnesota recently, we found that the busses on the rural routes had been running without serious interruption all winter. No alibis, no excuses, if you wanted to go somewhere—100, 150, 200 miles—it was quite simple. Get a time table and be on the corner when the bus started and you got there in comfort.

No main highway has been blocked for more than 24 hours, even though in some places snow has been "piled at the side of the road nearly to the telephone wires." This work is an encouraging example of large scale snow fighting.

How was it done? By cooperation, forethought and energy. In this work, the State of Minnesota cooperated with the Minnesota Motor Bus Association. The two agencies got together last fall in St. Paul—they planned a combined campaign to fight snow on a larger scale than ever before, and keep the main roads open. The State has erected 166 miles of snow fence and operated much snow fighting equipment. The Bus association has operated as much or more equipment. The plan succeeded.

What did it accomplish? It made the winter more pleasant and profitable for everybody. It made the highways safe and comfortable. The full value of open roads can hardly be described.

Now is the time, as the snow is disappearing, to plan ahead, to study such examples as this, and determine next winter to fight the snow.

*Prove all things; hold fast that which is good.*
*—St. Paul.*

TABLE TO BOARD Respectability now dines at "tables." It has not always done so.

Our Anglo Saxon forefathers, men of sea and land, gathered round the "hearth" and "board"—sturdy, hospitable words. Into that Anglo Saxon land came the Normans. With them they brought new ideas and a romantic language. New words were added to the simple Anglo Saxon tongue—statelier words "descriptive of chivalry, luxury, honor and state."

Disdainful of "board," the Normans brought "table," and the table, especially at one period of their history, was very dear to their hearts. As the old chronicles tell us "they spread their cloths five or six times a day . . . They also brought in the custom of long and stately sitting at meat . . . exceeding all other men's feasting."

"Board" is Anglo Saxon—a simple word; "table," Norman, a more elegant word. In the intermingling of two peoples, two words meaning essentially the same thing could not survive. "Board" lost, "table" won.

Thus have new words been added to our basic Anglo Saxon tongue. Thus has the trend in the use of words gone from the plain to the elegant, from the simple to the complex, from a few words to many, and they are still increasing, as many school boys are sorrowfully aware.

Every world movement, whether of war or peace, every discovery, has added its quota of new words. Years ago Cicero added to the language many words we have inherited, "favor" for instance. And it is true to this day that there are men still spending hard hours, searching their minds and the dictionaries to coin new and needed words.

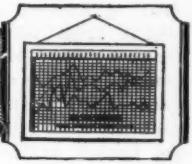
The work is not, and never will be, complete. To keep pace with our social and scientific developments, our language must grow. Old words will continue to take on new meanings and particularly will comprehensive words, words that express a great deal, be added to our language. All of this growth has its values beyond the power of the mind to properly imagine. It also has its dangers. The danger is not so much in the words, as in our attitude towards them.

Do we not need to remind ourselves, those of us whose duty it may be to write for the busy practical men, that the essential things of life are simple things, that the great thoughts that have moved the world have always been capable of expression in simple terms? Further, that simplicity has a value in itself, that simplicity must be one of the foundation stones on which any successful movement is founded?

If, therefore, we are agricultural scientists, much learned in the vocabularies, let us try and return now and again to the "hearth" and "board" of our forefathers. Let us heartily support the efforts of all those whose work it is to reduce many things to a few—the complex to the simple—and give a full measure of praise for good work well done.

It will tend to lessen the strain in many places, high and low, and to do both ourselves and our neighbors a lot of good.

# AGRICULTURAL DEVELOPMENTS



## By P. M. *Farmer*

### Impertinent Investigator

A man named Lively (his name adding insult to injury), professor of rural sociology at Ohio State University, has been spying on the farmers of that State to find out whether or not they loaf and how much. He has even been making comparisons of one section with another, one of his detailed studies having been conducted in a southeastern county and another in a county in the northwestern section. He reports the country store still a haven for males exclusively and still attracting large numbers of so-called loafers.

In the southeastern county, of 83 "possible loafing places" 77 are stores, 19 of them in villages, 31 in hamlets, and 27 in the open country. The other county was not found to be so well blest with loafing places, having only 37, of which 21 were in villages, 12 in hamlets, and 4 in the open country. But apparently there was just as strong a tendency to loaf, for the attendance at these places averaged from 15 to 20, while in the southeastern county it averaged only 7 to 9. Professor Lively has the loaferies roughly classified on the percentage basis as to whether they are considered bad or of good repute. What can be done about this?

### Fertilizer and Manure

Most persons interested in soil improvement know of the forty-year-old fertilizer experiments at the Pennsylvania State College, the oldest in the United States. Speaking before the Maryland Farm Bureau Federation meeting recently, Prof. F. D. Gardner of that college said that on these old plots complete fertilizers have maintained crop yields approximately as well as manure and just as economically if the cost of the manure is taken as $1.87 a ton.

### New Poultry Parasite

A very small red worm, related to the parasitic roundworms, has recently been found in the stomachs of a number of chickens sent by New Jersey farmers and poultrymen to the state agricultural college. The parasite is thought to be new in this country. It embeds itself in the walls of the stomach, forming a little knot somewhat larger than the head of a pin, and a large number of them give the organ a lumpy appearance and cause its shape to be almost spherical instead of elongated as is usual.

The investigators believe the worm extracts considerable blood from the tissues and must do great damage. The fact that the insect gets into the walls and causes them to thicken indicates great difficulty in treatment. The poultry experts advise raising young birds on fresh ground from which suspected adult birds are excluded.

### Eleven Thousand Co-ops

There have been some conspicuous failures in farmers' cooperative organizations, but these cases should lead no one to believe that the movement is on the down grade.

That agriculture is finding great benefit from such associations is shown by the rapid growth in their number. At the close of 1925 there were 10,803 farmers' business organizations of all kinds listed with the United States Department of Agriculture. If there had been 45 more on the list the total number would have been just twice as many as were listed in 1915. The total of all the active farm business organizations is thought to be about 12,000, most of them having reported to the Department. They include all types except cooperative banks, credit associations, and insurance companies.

### Weed Seeds Flavor Meat

Montana tests have shown that mill screenings containing large amounts of such weed seeds as fanweed, mustard, false flax, wild buckwheat and others will give a bad flavor and odor to the lamb produced on such feed. A lamb dinner was given by the experiment station, each guest being served a piece of lamb produced by feeding screenings high in these weed seeds and a piece produced by wheat feeding. Every person preferred the wheat-fed lamb, and the weed flavor was pronounced undesirable. The investigators are now searching for a way to feed the screenings without leaving the off flavor in the meat.

### Fertilizer Leaching

It seems almost paradoxical to say that there is more loss from leaching of the less soluble forms of nitrogen fertilizers than of the more soluble forms, but that conclusion is reported from New Jersey. The reason given is that when a plant has the more soluble fertilizer, such as nitrate of soda, sulfate of ammonia, urea, and ammonium phosphate, it starts quickly and uses up the food in the soil to better advantage. The conclusion is that organic nitrogen really costs more than the more soluble forms. But it is good when a "conditioner" for the soil is needed.

### More Clean Hogs

Throughout the corn belt hog raisers are taking to the idea that the hog thrives better under clean surroundings, and as a result they are making more money. In Nebraska those who followed the sanitation plan last year made enough more than the general run of pig producers to pay for a lot of new equipment, including a new set of A-type houses for their sows, fencing material for all the new lots they needed under this plan, and had in addition a dollar a day extra to pay them for the bother of attending the sows and pigs out in the lots. These men raised one and one-half more pigs to the sow than the average farmer and all their pigs averaged 40 pounds heavier at six months than the pigs that did not have the sanitary advantages.

This spring 1,000 Illinois farmers in 78 counties will demonstrate to others in their communities the value of this system, which was originated a few years ago by the late Dr. B. H. Ransom of the United States Department of Agriculture. It was demonstrated last year on 608 Illinois farms in 61 counties, and all these counties will be carrying on the work this year. It looks as if the roundworm finally will be eliminated as a serious factor in pork production.

### Hear! Hear!

The latest report by the U. S. Department of Agriculture has it that there are now nearly 1,000,000 receiving sets on farms. In some States from 25 to 40 per cent of the farms have them.

# Foreign and International Agriculture

The purpose of this department is to help us understand the scientific, practical, and industrial agriculture of other countries and the international developments which result. The editor believes that such knowledge is now of the greatest importance in our agricultural prosperity. Every care is taken to insure accuracy—both of facts and their interpretation.

THE year 1925 was not an especially prosperous one for Hawaiian producers of farm crops. Prices were low for the products they sold and generally high for those which they bought. Many farmers are becoming discouraged and the movement from farm to city continues.

The vital problem confronting farmers is to lower their cost of production. The most logical way to attain this end is by increased production per acre, in connection with cooperation in buying their supplies.

The proper understanding of the problems of fertilization is the basis of all really successful farming ventures. In order to more fully get this understanding, all farming communities should organize and cooperate with their agricultural extension men. An individual farmer is not able to make the necessary soil examinations and to conduct the necessary field experiments which will tell him the plant food requirements of his soil. But, by working together this information may be easily obtained.

Unless one has had the experience, he does not realize the improvements that may be made by a proper understanding of his problems. It is very important that these problems be studied on the spot. It will not do to apply the successful methods of one district to another district where conditions will be different, without preliminary trials. This often leads to disappointment. A proper study of fertilizer problems always gives large returns.

One often sees in the literature, references to the wonderful natural fertility of the Hawaiian soils. This makes those of us who know the soils here, rather impatient. Without heavy fertilization and green manuring, all the sugar and pineapple plantations would soon be out of business. With proper fertilization and irrigation, some fields have given yields of 140 tons of cane equal to 18 tons of sugar per acre. These same lands, without fertilizer, would produce 15 to 20 tons of cane or about 2 tons of sugar per acre.

The area planted to sugar cane in the Hawaiian Islands has not materially changed in the last 15 years or so and amounts to about 220,000 acres.

In 1914, 44,000 tons of fertilizer was used on the area. In 1924, this had increased to 95,000 tons. The average yield of sugar for the years 1905-14, was 4.87 tons of sugar per acre. The yield for 1925, was over 6.50 tons of sugar. It is not claimed that all this increase was due to better fertilization, but a large part of it was. Better cane varieties and a general improvement in cultural methods all helped in the improvement.

All the sugar and pineapple planters are organized for the purpose of studying the various agricultural problems which confront them. Both maintain large experiment stations for this purpose, costing hundreds of thousands of dollars each year. These stations receive no government funds of any kind. The costs of these stations are prorated among the plantations on a yield basis. That the investment pays is indicated by the fact that the scopes of these institutions are being enlarged from year to year. Of course, one of the main activities of these stations is the study of soil problems.

Although the islands are very small, a tremendous variation has been found in the soils of the different districts. With sugar cane, for instance, some districts need nothing but nitrogen, being well supplied with both phosphoric acid and with potash. Other soils, mainly the upland soils, need phosphoric acid in addition to nitrogen, while other soils, nearby perhaps, but, generally in the very rainy districts, require potash in addition to nitrogen but do not respond to phosphoric acid. In other places, both phosphoric acid and potash are needed as well as nitrogen.

Very large quantities of fertilizer are used, often as much as 60 or 70 dollars worth per acre. When one is spending that much money, it is important for him to know what he is doing. If his soil does not need phosphoric acid, for instance, it is waste for him to put some on. The fertilizer dealer is just as interested as the farmer in seeing that he does not use unnecessary ingredients for, unless the farmer feels that he is getting a return for his money, he will not continue to buy fertilizer.

In order to meet these varying needs, mixed fertilizers of 20 different formulas are used on the comparatively small area involved. In addition to this, special dressings of nitrate of soda, nitrate of lime, or other nitrogen salts, of superphosphates and of potash are also used.

To obtain the information necessary for the proper coordination of this detailed system of fertili-

*Sugar cane 5 months old—nitrogen and phosphoric acid were used here but no potash*

zation, many thousands of soils were analyzed and field experiments conducted. These soil analyses and field tests were carefully studied and from information obtained, it is now possible, with a very good degree of accuracy, to tell the plant food needs of a soil by its chemical analysis.

In order to obtain accuracy in field tests, it is much better to depend on replications rather than on weird mathematical acrobatics. Also one should not attempt to answer all of the questions at once, but should take them up one at a time. If he is interested in potash, for instance, he should not try to find out in one test whether he needs potash, what is the best form to use, and how much.

First of all, he should find out if potash is needed. To do this, a uniform part of the field is selected and laid out in about 12 plots. Potash is applied to every other plot and enough nitrogen and phosphoric acid is applied uniformly to all plots. The plots are made of such size and shape as to interfere the least with the regular farm routine. In this way, tests may be put in at very little cost and many farmers will be willing to make them.

The plots are made of such size that the yield will be of some convenient unit. In experimenting with sugar cane where the cane is harvested in wagons, the size of the plot is made so that the yield will be about a wagon load or multiples of one load.

After the basic question as to the need of potash has been determined, steps may be taken to determine the other questions.

But this does not mean that until all these points are decided that one must not use fertilizers. Here in Hawaii, we have found the returns from fertilizer so great that we do not hesitate to recommend the use of a complete fertilizer to begin with. Then as we obtain the desired information we drop one element or another and adjust the amount to the most economic quantity.

It is the careful following of such methods as outlined above that has enabled Hawaii to lead the world in the acre production of sugar and pineapples.

*Sugar cane 5 months old—400 pounds per acre of sulphate of potash was used in addition to nitrogen and phosphoric acid*

# *Keller's Field Day*

(*From page 5*)

to the field southwest of the house where the boys from the vocational class in agriculture of the St. Francis Community High School had previously shucked out one-fiftieth of an acre from each of the plots.

The corn was in piles at the ends of the rows and by each pile was a placard indicating the yield per acre and the name of the variety or the name of the man furnishing the seed. The group of interested farmers and their wives was led by Mr. Keller down the ends of these rows while he discussed the relative merits of the various plots of corn.

DURING the five years past in which Mr. Keller has been conducting corn tests similar to the one this year, the white corn has outyielded the yellow from four to 17 bushels per acre. This year the situation was reversed, the yellow outyielding the white by about six bushels—all of the white varieties yielding 13.9 bushels and the yellow varieties making 19.5.

However, the five-year average of tests are from this same farm and show the white making an average of 33.7 bushels and the yellow making an average of 27.7. Mr. Keller accounted for this by saying that the rains came at just the right time to help the yellow corn and that they came too late for the white corn, the white being a shorter season corn.

The varieties which have been doing the best for Mr. Keller during these five years are Freed's White Dent, Cassel White, Colby Bloody Butcher and Blue Squaw.

When the group reached the end of the field, B. F. Barnes, superintendent of the experiment station at Colby, presented some results of experimentation with corn at Colby. In general his results coincided with those of Mr. Keller.

In regard to the preparation of the soil, Mr. Barnes stated that spring plowing for corn had gotten better results than fall plowing. The only time that Mr. Barnes would advocate plowing for corn is in the spring when the ground is especially hard.

County Agent Brunson discussed the results of type tests of seed corn as conducted in this county and in Kansas and Nebraska. These tests in other parts of Kansas and in Nebraska have resulted strongly in favor of the smooth type of seed corn. Tests in this county so far at least have shown that there is no very decided difference in favor of either the rough or the smooth.

Figures as to the drying qualities of the corn resulting from the rough and smooth types of seed proved interesting. In 1923, 45 days after shucking, dry weights were made on these two classes of corn and these weights showed that the corn from the rough type of seed lost 29.8 per cent in weight while the corn from the smooth type lost only 28.3 per cent in weight, thus showing that in that year at least the rough loses more weight in drying than the smooth.

Out of all this Mr. Keller has concluded that Freed's White Dent corn is the best for Cheyenne county and has secured several bushels of certified seed of this variety. He has decided to give up conducting these variety tests and will give time to the production of certified seed corn.

# REVIEWS

This section contains a short review of some of the most practical and important bulletins, and lists all recent publications of the United States Department of Agriculture and the State Experiment Stations relating to Soils, Fertilizers, Economics, Crops, Crop Diseases, and Insects. A file of this department of BETTER CROPS would provide a complete index covering all publications from these sources on the particular subjects named.

## Fertilizers

Bowling Green, Virginia, is in the sun-cured tobacco district. In 1908 an experiment station was started there for carrying on fertilizer experiments with tobacco. In 1920 the work was reorganized; many of the old experiments were discontinued. The results of the 12-years work, up to 1920, have just been published in Bulletin 242 "Experiments with Sun-Cured Tobacco and Other Crops Grown in Rotation With It." W. W. Green is the author. Different sources of ammonia, for sun-cured tobacco, sources of phosphorus and potassium, the effect of rotation, varieties, residual effects and the use of lime are among the subjects discussed. It is a useful bulletin.

The Soils Section, Michigan State College, is to be commended on the series of circular bulletins recently gotten out on fertilizer recommendations for the soils of several counties. For each county a fertility map is given following which are detailed recommendations for the most economical use of fertilizers on nearly 20 crops of the soils shown in the map. Two major groups are made: originally well drained and poorly drained. We have before us such circulars for 11 counties. The authors are M. M. McCool and J. O. Veatch.

Most land has too little soluble nitrogen; that is nitrate nitrogen. But there are parts of Colorado that have too much nitrate. Such instances of excessive nitrates in Colorado soils appeared as "brown spots." A very careful study of these lands has been made by Wm. P. Headden and published as bulletin 299 "The Nitrate Question in Colorado; A Review for the Farmer." The bulletin is very practical and is written in a "very-easy-to-read" style. It should be in the hands of all farmers that have such brown spots on their farms.

Director Jacob G. Lipman, New Jersey Experiment Station, is a well-known authority on the use of fertilizers. He has recently written a very interesting article on "Fertilizer Prospects for 1926—The Use of Concentrated Materials in Potato Fertilization," in the American Potato Journal, January 1926. Other interesting articles will be found in this number and also in the February issue on potato diseases, inspections, spraying and the potato situation in different parts of the world.

The results of fertilizer inspections and registrations recently published are as follows:

*"Fertilizer Report, Seed Report," Bulletin of State Board of Agriculture, Dover, Delaware, Vol. 15, No. 5, July-December, 1925, Miscellaneous January-December, 1925.*

*"Commercial Fertilizer Law," The State of Florida Department of Agriculture, Inspection Division, J. Hinton Pledger, Supervising Inspector.*

*"Eighteenth Biennial Report of the Department of Agriculture of the State of Florida, Division of Pure Food and Drugs, Stock Feed, Fertilizer and Citrus Fruits," for the years 1923 and 1924. Nathan Mayo, Commissioner of Agriculture, Tallahassee, Florida.*

*"Commercial Fertilizers," Bulletin Georgia Department of Agriculture, Serial No.* 100, *Season* 1925. *J. J. Brown, Commissioner of Agriculture, Atlanta, Georgia.*

*"Commercial Fertilizers," State Fertilizer Department, University of Maryland, College Park, Maryland. Control Series, No.* 116, *February*, 1926.

*"Inspection of Commercial Fertilizers," Massachusetts Agricultural Experiment Station, Amherst, Massachusetts, Bulletin No.* 33, *December* 1925. *H. D. Haskins, L. S. Walker and George B. Dalrymple.*

*"Commercial Fertilizers," Vermont Agricultural Experiment Station, Burlington, Vermont, Bulletin* 248, *September*, 1925. *J. L. Hills, C. H. Jones and G. F. Anderson.*

*"Analyses of Lime, Fertilizers and Field Seeds," Department of Agriculture and Immigration of Virginia, Bulletin No.* 219, *February-March*, 1926.

*"Reports of Fertilizer Tests for* 1925," *West Virginia Department of Agriculture Weekly Market Bulletin, Charleston, West Virginia, Volume* 9, *Number* 35, *February* 22, 1926.

*"Official Fertilizer Inspection for Wisconsin," Wisconsin Department of Agriculture, Fertilizer Inspection Division, Analyses of Fertilizers for* 1925, *Registrations of Fertilizers, Bacteria and Limestones for* 1926, *February* 20, 1926. *W. B. Griem.*

## Soils

In Special Bulletin No. 136, "The Muck Soils of Michigan," Michigan Agricultural Experiment Station, Drs. M. M. McCool and Paul M. Harmer ably present the essential facts concerning reclamation of muck soils and production of general crops on such soils. So very concise is the treatise and so applicable is it to muck soils in other states, that farmers desiring to reclaim such soils should write for a copy of this bulletin.

The Department of Soils, Ohio State University, in their "Timely Soil Topics" pamphlet No. 90, presents in a very interesting manner the geological origin of the soils of Northwestern Ohio.

"Timely Soil Topics" No. 93 (Radio Lecture No. 2), charts the land resources of Ohio. It shows very clearly how the soil survey work has made it possible for a farmer to recognize soil differences. The relation of climate and rainfall to soil characteristics is described in detail.

## Crops

Quality production seems to be the keynote of most of the bulletins on crops which are coming out this spring. With the farm surplus a vital agricultural question, and one which is going to require time and serious work on the part of our best economists, it is well for the farmers to turn their attention to quality rather than quantity production.

Important and of interest to extension workers and farmers all over the South will be South Carolina's bulletin 225, issued in January at Clemson College—"Cotton Experiments at Florence." E. E. Hall and George M. Armstrong present their findings with text and pictures that instruct.

Other bulletins that merit inspection include:

*"The Sugar Beet in California," Agricultural Experiment Station, Berkeley, California, Circular* 302, *January*, 1926. *R. L. Adams.*

*"Crossed Corn," Connecticut Agricultural Experiment Station, New Haven, Connecticut, Bulletin* 273, *January* 1926, *D. F. Jones and P. C. Mangelsdorf.*

*"An Experiment in Selecting Corn for Yield by the Method of the Ear-Row Breeding Plot," Agricultural Experiment Station, Urbana, Illinois, Bulletin No.* 271, *November* 1925, *Louis H. Smith and Arthur M. Brunson.*

*"Results* 1925 *Cotton Production Contest," Extension Department of the Mississippi A. & M. College and the United States Department of Agriculture Cooperating, Extension Circular No.* 46, *January* 1926, *R. S. Wilson.*

*"Variations in Varieties of Canning Peas," New York State Agricultural Experiment Station, Geneva, New York, Bulletin No.* 532, *November* 1925, *F. H. Hall.*

*"New or Noteworthy Fruits," New York State Agricultural Experiment Station, Geneva, New York, Bulletin No.* 531, *October*, 1925, *U. P. Hedrick.*

*"Growing Early Cabbage," Agricultural Experiment Station, State College, New Mexico, Bulletin No.* 151, *January* 1926, *A. B. Fite.*

*"Getting a Stand of Alfalfa," Crop Talk, Department of Farm Crops, The Ohio State University, Columbus, Ohio, No.* 31, *February* 1926, *E. P. Reed.*

*"Type Classification of American-Grown Tobacco," United States Department of Agriculture, Bureau of Agricultural Economics, Washington, D. C., Miscellaneous Circular No.* 55, *January* 1926.

*"Hubbard Squash in Storage, Climate of Storage Rooms and Changes in Composition," Vermont Agricultural Experiment Station, Burlington, Vermont, Bulletin 251, November 1925, M. B. Cummings and E. W. Jenkins.*

*"Agricultural Seed Inspection," Vermont Agricultural Experiment Station, Burlington, Vermont, Bulletin 253, December 1925, Anna S. Lutman.*

*"Sow Northern-Grown Domestic Red Clover Seed," College of Agriculture, Madison, Wisconsin, Circular 199, March 1926, E. J. Delwiche.*

*"Planning and Planting Home Grounds," College of Agriculture, Madison, Wisconsin, Circular 190, December 1925, Franz A. Aust.*

*"Inoculated Seed Increases Yield and Quality of Legumes," College of Agriculture, Madison, Wisconsin, Circular 194, February 1926, A. L. Whiting and E. B. Fred.*

## Economics

"Spanning the gap" means getting farm products from the farm into the hands of the consumers. A shorter word is marketing. Selling is only one of the nine services involved in marketing; the last. Cooperation is possible in some of these services in marketing; rarely in all. What cooperation can do and what it cannot do for Washington farmers is carefully and clearly explained by E. F. Dummeier in Bulletin 194, "Cooperation in Marketing Washington Farm Products." The bulletin is a long one, 107 pages. It gives detailed information regarding 166 cooperative organizations in Washington which did an annual business of $45,000,000. Two interesting pages give interesting reasons as to why some of these organizations failed.

Going from Washington south, we notice that George O. Gatlin has made an interesting study of "Cooperative Marketing of Cotton." The results are given in Bulletin 1392, U. S. D. A. The work discusses the methods of 280,000 cotton growers who marketed 10 per cent of the cotton crop through cooperative agencies.

In Alabama as in other States, the price of farm crops has varied widely during the last few years. Is the major trend of cotton prices downward? J. D. Pope, Specialist in Farm Management and Agricultural Economics, believes that it may be; that caution is the wisest attitude. A very constructive program is given for guarding against any future lowering of cotton prices. The work is a thorough statistical study of cotton prices for over 100 years. (Prices of Farm Products in Alabama by J. D. Pope, The Alabama Polytechnic Institute, Extension Service, Auburn, Alabama, Circular 91, January 1926.)

Other very useful information will be found in:

*"The Utilization of Surplus Plums," Agricultural Experiment Station, Berkeley, California, Bulletin 400, February 1926, W. V. Cruess.*

*"A Permanent Program of Agriculture for Alabama," by F. W. Gist. Farm Economics, Vol. 1, No. 5, Auburn, Alabama.*

## Diseases

*"A Promising Remedy for Black Measles of the Vine," University of California, College of Agriculture, Agricultural Experiment Station, Berkeley, California, Circular 303, February 1926, L. O. Bonnet.*

*"Irish Potato Disease Investigations, 1924-25, University of Florida, Agricultural Experiment Station, Gainesville, Florida, Bulletin 176, November 1925. L. O. Gratz.*

*"Diseases of Cucumbers," University of Florida, Agricultural Experiment Station, Gainesville, Florida, Bulletin 177, December 1925, G. F. Weber.*

*"Diseases of Brambles in Illinois and Their Control," University of Illinois, Agricultural College and Experiment Station, Urbana, Illinois, Circular No. 305, February 1926, A. S. Colby and H. W. Anderson.*

*"Control of Smuts on Cereal Crops," Agricultural Experiment Station, North Dakota Agricultural College, Fargo, North Dakota, Circular 28, February 1926, H. L. Bolley.*

*"Loose Smut of Wheat," Agricultural Experiment Station, North Dakota Agricultural College, Fargo, North Dakota, Circular 29, February 1926. W. E. Brentzel.*

*"Control of Smuts of Wheat and Oats with Special Reference to Dust Treatments," Ohio Agricultural Experiment Station, Wooster, Ohio, Bulletin 390, R. C. Thomas.*

*"Senescence and Rejuvenescence in the Cells of the Potato Plant," Vermont Agricultural Experiment Station, Burlington, Vermont, Bulletin 252, December 1925, B. F. Lutman.*

## Insects

The production of cucumbers is an important industry in many sections of the country. In recent years many important producing areas have abandoned cucumbers because of the presence of the striped cucumber beetle and cucumber wilt. The wilt disease is spread by the beetle. The Ohio Agricultural Experiment Station in Bulletin 388, by J. S. Houser and W. V. Balduf, gives results of several years of experimental work on control of the beetle and wilt.

So important has become the control of plant lice of vegetable crops, that the New Jersey Experiment Station has published in Circular 178 a complete treatise on the subject. Ninety-four species of plant lice have been identified in New Jersey, of which 15 species are enemies of vegetable crops. After much experimental study, nicotine dust or spray is recommended as the best agent for effective control.

*"Spray Schedule for Peaches," Agricultural Experiment Station, Gainesville, Florida, Press Bulletin No. 373, January, 1926, Carl B. James, J. R. Watson.*

*"Push Out the Spring Growth to Avoid Aphis Injury," Agricultural Experiment Station, Gainesville, Florida, Press Bulletin No. 374, January 1926, J. R. Watson, R. W. Ruprecht.*

*"Stamp Out the Citrus Aphis During the Winter," Agricultural Experiment Station, Gainesville, Florida, Press Bulletin No. 375, January 1926, J. R. Watson.*

*"Fumigation of Citrus Trees," Agricultural Experiment Station, Gainesville, Florida, Press Bulletin No. 376, January 1926, J. R. Watson.*

*"Disinfecting Truck Crop Seed with Corrosive Sublimate," Agricultural Experiment Station, Gainesville, Florida, Press Bulletin No. 377, February 18, 1926, G. F. Weber.*

*"Spray Calendar for Apples and Quinces," New Jersey Agricultural Experiment Station, New Brunswick, New Jersey, Circular 180, 1926.*

*"Spray Calendar for Peaches," New Jersey Agricultural Experiment Station, New Brunswick, New Jersey, Circular 181, 1926.*

*"Spray Calendars for Plums and Cherries," New Jersey Agricultural Experiment Station, New Brunswick, New Jersey, Circular 182, 1926.*

*"Spray Calendar for Grapes," New Jersey Agricutural Experiment Stations, New Brunswick, New Jersey, Circular 183, 1926.*

*"The Adherence to Foliage of Sulfur in Fungicidal Dusts and Sprays," New York State Agricultural Experiment Station, Geneva, New York, Technical Bulletin No. 116, November 1925, R. W. Thatcher and Leon R. Streeter.*

* * *

# *Kentucky Blue Grass*

(*From page* 18)

computed Acre Value, (5) Digestible Nutrients—Pasture vs. Grain Rotation and Labor Economy of Pasture Feeding, (6) Pasture Fertilization, (7) Soil Building—Blue Grass Sod vs. Crop Rotation.

In this, the introductory article, the writer has attempted for a purpose to paint a word picture depicting two rather extreme agricultural conditions in two almost adjoining states. The one especially favored by nature (in a limited area); the other apparently forgot. One the open prairie, the other the rugged mountains. Strange, however, as it may seem the home of the Holstein, the two northern counties of Pennsylvania, ranks as one of the greatest dairy sections in the Union. The writer does not claim to have solved the eastern pasture problem, but he has demonstrated beyond question that Kentucky blue grass pastures may be developed to equal if not excel the natural pastures of Kentucky.

***Editor's Note:—Watch the next issue of* BETTER CROPS *for Professor White's article on "The Nature of Pennsylvania Pasture Experiments.***

# *Living off the Farm*

(*From page* 8)

The figures used by Hawthorne are the average of the value of the family living from the farm given for each individual place. For the whole country he has averaged the living records of nearly 8,000 families. The average of the records for a certain section give the figures used for the cotton belt, the corn belt or some other belt.

For the entire United States six items furnish 92 per cent of the value of the family living from the farm. They are house rent, fuel, dairy products, poultry and eggs, pork and lard, and fruit and vegetables. House rent made up 36 per cent of the value of this part of the family living. Fuel made up three per cent and food, 61 per cent. Seventy-four per cent of the food used was animal products and only 26 per cent came from crops. The cow, the hog and the hen ranked in that order in supplying the family with food and the hog ranked first in supplying meat.

Hawthorne finds in the data no marked indications that families living in the better agricultural localities obtain more of the family living from the farm than do those in the poorer localities. The house rent was valued at a little more which indicates greater values in houses in the better farming regions. He does find, however, that the value of the family living from the farm varied with individual families from nothing to more than a thousand dollars per year and wide differences were found in every community.

The value of the products used was based on the prices they would have brought at the farm. Their value at city retail prices in one section of Ohio where the comparison was made, amounted to more than twice the farm value. Practically everywhere the living from the farm had an average value of $200 to $800 for each family per year. In a few localities some families got nothing from the farm directly as they did not live on the place and used no products from

(*Turn to page* 50)

*The value of the farmer's house rent is* $184 *per year*

it. This was noticeable in Polk county, Florida, where about 40 per cent of the citrus grove owners were non-resident, usually living in nearby towns and cities.

In general this study showed that the value of the family living from the farm was more for the large farms in a given section than for the smaller ones. Also in most cases the larger families used more dollars worth of family living from the farm than did small families. It was a little less for tenants than for owner families. The value of food furnished was practically the same, but that of the house rent was less. As the tenant had to share the farm receipts with the landlord, the value of the family living from the farm was larger in proportion to the tenants' receipts than would be the case for an owner.

FOR all of the farm business survey records included in this study, the value of the family living from the farm was practically one-ninth as much as the farm receipts, with variations from less than one-twentieth in a few localities with large farms and large capitalization or with highly specialized types of farming, to more than one-fifth in some localities with small farms and small capitalization. Prominent among the former localities are Polk county, Florida, Sherman county, Oregon, and the Palouse country of Idaho and Washington. Among the latter are Sussex county, Delaware; Catawba county, North Carolina; Jones county, Mississippi; and Washington county, Ohio. Farm receipts mentioned here include the proceeds from the sale of crops produced during the farm year, the increase from livestock, and the receipts from outside labor, rent of buildings, etc.

With all the variations for different localities in the relation of the value of the family living from the farm to the farm receipts, there were even greater variations for the different farms of a locality. In fully one-third of the areas studied, there were a few farms with the value of the family living from the farm amounting to more than their farm receipts and in most of the localities there were some farms where it amounted to as much as 50 per cent or more of their farm receipts.

BEARING in mind that the operating expenses of the farm business must be paid from the receipts, Hawthorne emphasizes the fact that such farms had but little cash left from the farm business for the use of the family. It was not, he says, that the value of the family living was so much on these farms when compared with the others, but that the farm receipts were so low.

THE value of the family living from the farm in 1918 for the places studied in Frederick county, Virginia, averaged $556. The same year it was $690 for white farmers in Sumter county, Georgia, and $471 for the colored farmers in that county. Washington county, Ohio, farmers got $511 in living from their farms, compared with $654 for Tama county, Iowa. For 1921, Washington county showed a value for the living from the farm of $399; and Tama county, $642. The highest average value of the living from the farm for any community studied was $690 for white farmers in Sumter county, Georgia, in 1918; and the lowest was $230 for Polk county, Florida, in 1919. The average value of the family living from the farm for all farms studied for all the years was $518.

# *Profit—$269 per Acre*

(*From page* 11)

the seed was dropped. A fairly good seed bed was made to start with.

The potatoes were plowed four times. The seed were treated, and the vines sprayed four times. In spite of an unusually dry season, Mr. Wood dug 190 bushels of potatoes from the acre.

The average yield for Rappahannock county is right around 80 bushels in good years, and below that this year. Potatoes from Mr. Wood's acre were divided as follows; 60 bushels of certified seed, 115 bushels of table stock and 15 bushels of culls that were good for stock feed only.

The market price was $2.50 for certified stock, or $150.00 for the total and $2.00 for the table stock, making $230.00 for that lot, or a total of $380.00 for the acre. The cost of production was as follows: seed $32.00, fertilizer $36.00, spray $18.00 and labor $25.00, making the total cost of production $111.00 and leaving a clear profit of $269.00 for the acre.

The Farmers Union Store manager told the county agent not long ago that 5-8-5 fertilizer has been in such strong demand for the past few years that it is hard to keep a stock on hand. This the writer can verify, for he was unable to get, not only the 5-8-5 but any other high analysis fertilizer last spring for his garden, and incidently, his potato crop was cut 50 per cent in quantity and about 80 in size and quality.

This article is not intended to convey the idea that 190 bushels of potatoes is a high yield for the potato section, of Virginia, for it is not, but it is a good production for the Piedmont section.

The writer wishes to emphasize that potatoes may be produced profitably in the uplands of Virginia, where the yields are considered to be too low to make a profit, provided the proper plant food is supplied in sufficient quantities.

Further, it has been found by experiments that the potatoes produced in Piedmont, Virginia, make just as good seed for the eastern shore producers as do the Maine grown potatoes—another incentive to the Piedmont spud producer.

*State Inspector L. C. Beamer and Mr. Wood, grading potatoes*

# *Efficiency—and Then What?*

(*From page* 14)

such special profits tempt the recipients to increase their production. They also induce other farmers to adopt the efficiency methods that have made them possible. Increased production then wipes them out. In other words, increased efficiency, when confined to a few farmers, nets these few substantial individual gains that dwindle to nothing when, as a result of a general advance in efficiency, they have to be shared among the whole body of farmers.

THAT is what general improvements in farming practice accomplish. They divide up the cash returns from efficiency until the individual portion is negligible. Suppose, for example, our most efficient farmers begin planting a new and better variety of wheat or corn. For a time the practice brings them a return above the average received by wheat or corn growers. But as more farmers plant the improved variety, the supply of it increases and the premium for it declines. Eventually, when its use becomes general, there is no more profit in its production than there was in the production of the poorer varieties previously grown. The only difference is that there is now a penalty on growing the poorer kind, instead of a premium on growing the improved kind.

But is there no net gain for agriculture when its average efficiency is increased, you may demand? Not when the increased efficiency leads to increased production *regardless of market needs.* In that case the middleman or the consumer is the beneficiary, and not the producer. It is usually that way. Farmers, like other competitive producers, are habitually tempted to exhaust every possible chance to make a dollar. When a crop is showing a profit, they produce it and produce it until the profit disappears.

That is why efficiency in production does not suffice to make agriculture prosperous. In addition it is necessary to have an adjustment of production to the needs of the market, and such an adjustment requires collective as well as individual action. In our ceaseless striving for individual efficiency, we are apt to forget that individual effort, unless modified by considerations of the general welfare, is apt to degenerate into mere destructive competition. There are two things the farmers can do to retain for themselves the benefits coming from increased efficiency on the farm. Both call for group as distinguished from individual action.

YOU will guess that one of them is just ordinary cooperation in marketing. Let me give you an illustration of the way group action gets profits for farmers that individual efficiency cannot obtain. Tillamook county in northwest Oregon is settled by a high class of dairy farmers. Scientific dairying was started in the county as long ago as 1890. By 1919 it had more than 500 purebred cows and nearly 1,000 purebred calves and yearlings. Moreover, the region is ideal for dairying. Pastures are rich, stock can be grazed the year round, and labor and feed costs are therefore low.

With such advantages you might suppose dairying in Tillamook county could not be unprofitable. It was, however, until the dairymen got together for the cooperative production and marketing of cheese. As a matter of fact, it was not until 1909, when the Tillamook County Creamery Association was organized to federate a number of cooperative cheese factories, that really good financial results were shown. There had been some cooperation in the county before then, but not enough. Before the cheese factories were federated, they sold their output competitively. That played into the hands of dealers and reduced their profits almost to where they were in the old days of cheese production on the farm.

IN 1900 the Tillamook County Creamery Association began operations, with a membership of nine factories. Within six years its membership doubled. In 1923 there were 25 factories in the association. These factories made 7,113,176 pounds of cheese during the year and sold it for $1,884,689. Sale of whey, cream, and butter brought the year's receipts up to $1,927,290. Compare these figures with the returns for 1909, when the total amount of cheese sold by the association was only 2,506,612 pounds and the value of the product $386,135.

When their main reliance was individual efficiency, the Tillamook dairymen sold their milk on a guess system as to its value for cheese making. For lack of storage facilities, cheese made in the county was shipped on consignment to jobbers and commission houses in the season of heavy cheese production which is likewise the season of low cheese consumption. Naturally, it brought low prices. Small scale production of cheese on the farm was costly. It was but little less costly in the small cheese factories that preceded those now used. Cooperation had remedied these troubles, and cured the Tillamook dairymen of any hankering to return to the old system of unrestricted competition and devil take the hindmost.

THE other means farmers have at their disposal for preventing the results of general efficiency from slipping away from them lies in effort to raise their standard of living. This is something that must be widespread to be useful. Many farmers are content with a low standard of living because they want to turn profits into working capital, for the purpose of expanding their operations. An individual who scrimps to plant more corn or raise more hogs is likely to be applauded for prudence and foresight. But when too many do it, the result is heightened competition, lower prices, and diminished net profits for agriculture as a whole.

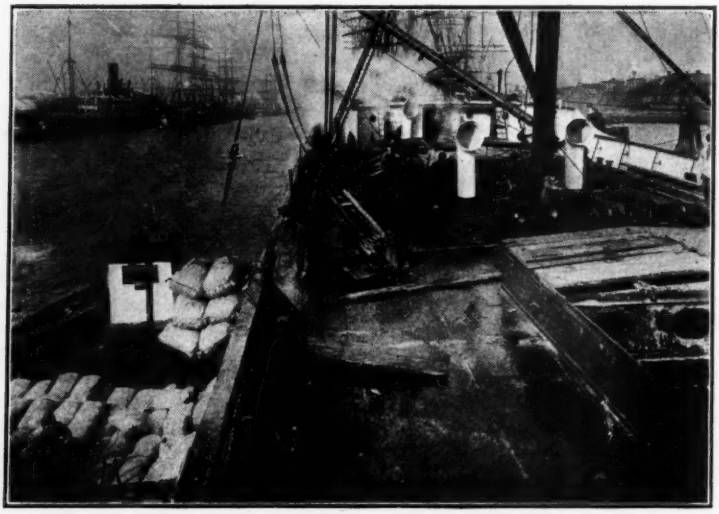
After all, you know, our farmers as a group do not maintain high standards of living. A study of 3,000 scattered farm families made by the United States Department of Agriculture indicated that the average total value of the goods and services used by them in one year was only $1,504. And of this value, $643 was furnished by the farm in food, fuel, and housing. Not many city artisans would be content with a standard of living representing so small an expenditure. Of course the city man has to buy many things that are not necessary on the farm. Nevertheless, many farmers go without things that most city men have, and that really contribute to life and happiness.

It may seem useless to urge individual farmers to increase their expenditures as a contribution to a general rise in farm standards of living, unless you can give them some assurance that other farmers will do the same thing. This is a case where individual and group interests don't always coincide. But if farmers put all their profits into expanding their production, they soon have the mortification of seeing their profits vanish. On the other hand, when they maintain good living standards out of their current income they tend to set up a collective demand for a reasonable income that soon becomes a force to be reckoned with. Trade unionists know how to make living standards a means of increasing their income. There is no reason why farmers should not do the same.

Essentially, it is a question of reconciling the interest of the individual farmer with the interest of the group. Farmers are a group, but they don't act as a group. They act as individuals. Showing them that collectively it is bad to increase means of production at the expense of reasonable living standards is of little use, unless collectively they can do something about it. Men get ahead individually by thrift and by building up their working capital. They will not modify that policy materially, without the prospect of a compensating advantage.

No sensible farmer is going to renounce what looks like a clear individual advantage simply to gain some remote and perhaps doubtful social advantage. But if it can be shown that the group gain will more than offset the individual sacrifice, the question looks different. A case along that line can be made out for higher living standards on the farm, whereas it is hard indeed to justify the opposite policy of continually expanding the means of farm production.

* * *



*Loading German potash from barge to ocean-going freighter*

# *Brains and "Bone Dust"*

(*From page 23*)

County Agent R. N. Thomas of Jefferson county, who was in close touch with this work in his county, said, "The five acres of fertilized corn started growing much better, was of a deeper darker green, and grew more rapidly than the five unfertilized acres. It eared quicker, the ears were larger and more solid and ripened from 8 to 10 days before the unfertilized corn."

"THE ground was plowed 8 inches deep early in April," said Mr. Barnes, "and as soon as it was dry enough I went over it with the cultipacker following the practice of rolling down every evening all that I had been plowing during the day. I then let it lay a few days until the small weeds began to come up, when I harrowed it crosswise to kill all these young weeds that had germinated.

"I let it lay another week and then harrowed it again, this time going lengthwise of the field to kill the second growth of young weeds. This being especially foul land, it is necessary each year to kill all the weed seeds that have been washed in by the high water and the more of these that can be eradicated before planting the corn the easier it is to keep the corn clean.

"We can do much more effective work in the same time with a harrow before the corn comes up and do it much easier than with a cultivator or hoe after the corn is up. We harrow it twice and run the cultipacker over the field again in order to pulverize the clods and make a fine mulch to hold moisture.

"I then let it lay a few days and just before planting I went over the field with a disc harrow lapping half in order to clean out again all the young weeds and grass and to loosen the ground on top before planting. I followed this with a spike toothed harrow and then applied the fertilizer with a wheat drill.

"The corn was planted on the 24th day of May, running the planter about two inches deep, the rows three feet apart and drilling the corn 13 inches apart in the row. Immediately following the planter I went over the field again with the cultipacker. About the time the corn was two inches high I took the two-horse cultivator and plowed it, driving slow and being very careful to clear out the weeds and grass and not cover up any of the corn. I followed with this same implement once each week for the next four weeks.

"ON the fifth week I took a one-horse cultivator with five shovels and an 18-inch sweep in the back in order to keep the plow from running too deep and disturbing the corn roots and also in order to cut out any morning glory or other vines that the plow did not get. After the first plowing I thinned this corn, cutting out with a hoe any extra stalks, where there were two together in the row. When the corn began to shoot and tassel I went over the field again and cut out all barren stalks in order that the good stalks might have a better chance."

It is interesting to note that the seed which Mr. Barnes used to produce this, the highest yield

in the state, and to which he attributes much of his success, was secured from L. M. Vogler of Hope, Indiana. It was some of Vogler's very best seed and had tested 100 per cent. It is the same strain of corn with which Mr. Vogler won Grand Champion honors of the 1925 International Grain and Hay Show held in Chicago. This would indicate that the best show type of corn may also be the utility or high producing type.

"When I first went to the farm," said Mr. Barnes, "I grew little except tobacco, which was my principal money crop. Beginning a few years ago I became interested in corn through the local members of the Indiana 5-acre Corn Club. My first efforts to produce a high yield were not so successful because I did not recognize the importance of good seed from a high yielding strain.

"I first tried out a mixed corn that I purchased from one of my neighbors, but later experience has proved to me that this was a mistake. While this mixed seed would produce a good yield running well up toward 100 bushels per acre I am thoroughly convinced that I would never have been able to produce the highest yield in the state had I not discarded this mixed seed and purchased the high producing kind.

"Good seed, fertile soil, good management, frequent cultivations and the application of 'bone dust' turned the trick," said Mr. Barnes.

* * *

## *Dewberries*

(*From page* 16)

inches high, cottonseed meal tankage, or stable manure is used to encourage a vigorous growth the first season. Some growers use about 500 pounds of cottonseed meal, or some organic form, while others use 10 to 15 tons of stable manure per acre. After the first season, two applications of fertilizer are given each year, the first one being made as soon as the canes have been tied up in the spring. At this time a complete fertilizer is usually applied, composed of 2 or 3 per cent of nitrogen, 10 per cent of phosphoric acid and 8 per cent of potash. The quantity applied varies with the soil and with the different growers, but 500 pounds per acre of a fertilizer analyzing 2-10-8 is commonly used.

The second application of fertilizer is made immediately after the fruit has been picked and all the canes, both old and new, are cut off, the object being to induce a rapid growth of vigorous new canes for the next year's crop. A fertilizer containing a large amount of nitrogen is used at this time. An application of 500 to 600 pounds of cottonseed meal, tankage, or some organic form is considered sufficient, although there are growers using as much as 1,000 pounds. Growers using stable manure consider an application of 10 to 20 tons per acre sufficient. In addition to supplying nitrogen, stable manure adds large amounts of humus to the soil and is preferred when it can be readily secured.

Just as soon as possible after the fruit is picked, all the canes, old and new, are cut off as close down as practicable to the crown. All the litter including the canes is piled and burned and cultivation and fertilizing is begun, to be kept up until the new canes interfere.

DEWBERRIES ripened in Chesterfield late in May. Picking is done daily or every other day, depending on weather conditions as they accelerate or retard the ripening process. Women and children do practically all the picking, the rate of payment being at present one and one-half cents per quart. A picker carries a tray in which are set four or six standard quart strawberry baskets. These as filled are placed in standard 32 quart shipping crates. Dewberries are easily bruised and rehandling is impracticable, as are long and rough hauls to market or shipping point.

Yields vary widely, but in the dewberry region of the Sand Hills in North Carolina crops of 100 crates the acre have been obtained year after year and exceptional growers have consistently done still better. One 12-year-old field has produced more than 100 crates per acre ever since it came into bearing.

Original plantings are usually made with roots obtainable from any nurseryman or from neighboring fields. About 2,000 plants per acre are needed and plants cost about $10.00 per thousand. Once the grower has a patch of his own he provides his own transplanting material, by covering the tips of young canes with a few inches of earth late in the summer. These tips will take root almost at once and will be ready for setting out early in the fall. The rooted tips are cut off with 4 to 6 inches of vine showing. North Carolina plantations 19 years old are still producing.

* * *

## *Top-Dressing Alfalfa*

(*From page* 10)

through as good a stand as did the plots treated with potash alone or phosphate and potash, there would have been no need to plow up the field in fall, 1925.

Application may be made with the fertilizer drill. Since tillage of growing alfalfa may be injurious, this should be done when the alfalfa is dormant, either very early in spring or after cuttings. Broadcast applications may be made in some convenient manner at similar times, but the application will naturally have much slower effect.

Having applied the treatment, we'll look for results. Do we see them? When do they appear? The first year there will almost certainly be no difference apparent to the eye, and there might be little for a scale to show. To the eye they might not appear the second year.

The writer and many others who saw the plots mentioned were unable to see any differences in them until 1925 when there was a difference of ½ ton between the untreated and some of the treated plots. A few hundred pounds per cutting for four cuttings will pay a handsome profit on the fertilizer investment and the writer has not found the man who can tell such differences by inspection.

This story is not complete without mention of the total effect and the subsequent course of such fertilizer applications to alfalfa fields. They liberate for use else-

where upon the farm, manure which would otherwise have necessarily been applied to the alfalfa. The life of the alfalfa stand can be prolonged,—for how long it is impossible to say. It avoids much of the rubbish which is bound to be raked up after top-dressing the alfalfa with strawy manure. It enables the alfalfa plant to gather nitrogen more extensively and thus makes the farm richer in that element if the crop be fed on the farm. The farm will also be better supplied with phosphates and potash, because of the recovery of a certain proportion in the manure, an important consideration with sandy soils which are low in these elements.

* * *

## *Lee Critchlow, Hustler*

(*From page 27*)

Their first farm was way out nine miles from "some place." On this account they got it on a low cash payment. Of course this $300 capital didn't go far, but Lee's father kindly helped them out by going on a note for all they could not get on credit and the mortgage. This put them $3300 in debt.

Lee always was a good farmer as far as plowing, harrowing, cultivating and building up the soil on a farm was concerned, but when it came to marketing the hay and grain crops of his farm through livestock, Lee was hardly more than in the kindergarten class when he started farming.

On this first farm in addition to fertilizers and the manure he applied 135 tons of lump lime that he had burned on the farm. However, due to lack of knowledge in feeding and breeding of livestock his income those first few years was so meager that several times he and his wife thought they would go under. He was afraid even to tell his father their plight.

Finally someone told him if he would feed his chickens a mash with a variety of feeds in it and with lots of protein, his hens would do better. "I tried it," he said, "even put in some cottonseed meal." Results showed almost immediately in an increased egg production. "I wonder why this same thing wouldn't work on cows," thought Lee. So he tried more variety on the cows in addition to the old stock ration of corn meal, and bran, with eye-opening results on them. This was the beginning of Lee's agricultural education.

He began to read and study farm papers and bulletins from the State College. Then he got in touch with the county agent and got more help from him. When need of it came the county agent brought specialists from the college to help him. Especially was this true in poultry. Now Lee is such a booster of the county agent's work, that in 1925 he was awarded a gold medal for doing the most work of any man in the county to promote the agricultural interests of his community.

As their knowledge grew, the Critchlows began to realize that nine miles from market was too far when good farms could be had closer. So when an opportunity to sell for what they had put into it came, they were not slow in letting the farm go. Thus their first five years were about an even break financially but in experience they were far ahead.

They bought their second farm near a market and a state road. Immediately Lee began to lime, repair the buildings and erect a home-made silo. He also built a new poultry house along State College plans. In two years he had made such a transformation in the farm that one day a friend of his came along and asked him what

he would sell it for. Lee studied awhile and after consulting his wife he put a price on it $2,000 above its original cost plus the cost of the improvements (not figuring the labor which Lee did himself). He did not want to sell but the friend took him up and the Critchlows had to look for another farm.

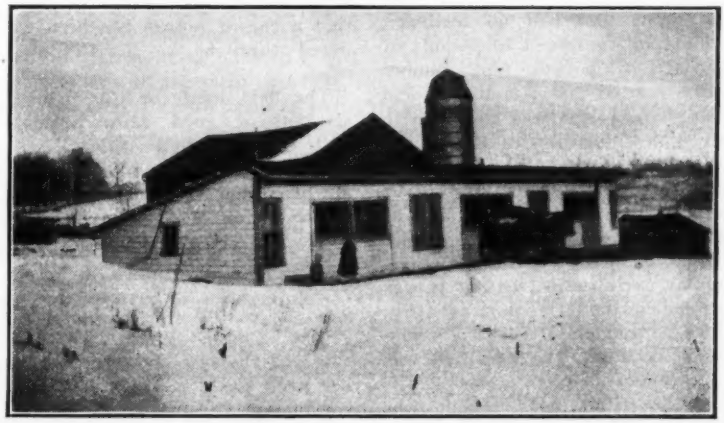
This time they bought on a cement road that runs between Pittsburgh and Franklin and only a mile from a town of several hundred people. On this farm he has added to his house, put up a $435 silo, cemented the cow barn and put in stanchions, built a 20 by 60 foot chicken house of one of the latest types, has running water in the house, barn and chicken house. He also has an acetylene lighting plant in the house and poultry house. A radio outfit keps him in close touch with the outside world. On the farm he has laid 3000 feet of tile drain and has applied 48 tons of lump lime (part of this on the pasture). The beauty of all these improvements to the Critchlows is that they are free of debt.

Lee has five fields on this farm that he cultivates. He has these divided into two rotations. Three of these fields have a total of 24 acres that he runs in a rotation of corn, oats and clover. The other two fields have 8 acres that he runs in a two-year rotation of wheat and clover. On the wheat and corn he applies 200 pounds per acre of a complete fertilizer and on the oats 200 pounds of acid phosphate per acre.

For livestock he has nine cows (six pure-breds), two heifers, and a purebred Jersey bull. The bull is out of a three-year old cow that produced 14,292 lbs. milk and 639 lbs. of butterfat. The bull belongs to a bull association of which Lee is a member. So for several years he is assured of a good bull. One of his foundation cows is a two-year-old that has milked as high as 40 pounds daily in the cow testing association of which Lee is a member.

His poultry flock of 400 hens are purebred White Leghorns. Last year under state supervision they averaged 174 eggs per hen. They get the State College mash and grain mixture along with sour milk and plenty of green feed.

He has his work so well systematized that his labor bill for outside help does not run $100 a year. Practically all the building and improvements are made by himself.



*The hen house and Silo that Lee Critchlow built*

# Potash *and* Cotton *on* Missouri Glades

(*From page 26*)

potash plot alone only about 40 per cent of the cotton was open whereas on the combination treatment area nearly 60 per cent was picked.

The final picking figured on a basis of seed cotton per acre showed a gain of 153 per cent for the potash, 150 per cent for the combination, and a loss of 14 per cent for the phosphate plot.

SOME very valuable information had been discovered by these 1924 trials but in farming we all know that one year's results can not be taken for conclusive evidence.

Harrison and Renner determined to try the proposition out again before saying too much about the first year's results. So much interest had been aroused from the sight of the field throughout the year that these gentlemen had to produce the goods. So in 1925 a similar trial was laid out on the same field.

This year six plots were laid out. The first had no fertilizer, the second contained 75 pounds of muriate of potash, plot number three carried 200 pounds of acid phosphate, plot 5 was treated with a complete fertilizer of 100 pounds of nitrate of soda, 200 pounds acid phosphate, 75 pounds muriate of potash, and plot number 6 was left as a check with no treatment.

The ground was broken thoroughly early in the season. It was bedded up the latter part of April, dragged and planted in the second week in May. The seed bed was in excellent shape.

As in 1924, this region was visited with a severe sandstorm but the cotton on this field stood the test satisfactorily owing to the excellent root growth caused by the fertilizers. Judge Harrison stated at that time he was pleased with the results in getting a stand.

Owing to a very wet and early fall, the cotton was picked as bolly cotton, that is, the cotton did not open sufficiently to be picked. This was true in a large measure throughout the entire cotton district.

| Plot | Yield |
|---|---|
| | Pounds per acre |
| Checks | 189 |
| Straight acid phosphate | 254 |
| Phosphate and potash | 896 |
| Muriate of potash | 914 |
| Complete fertilizer | 1106 |

Scott county farmers are convinced that a return of 485 per cent per acre as the complete fertilizer in this case gave is worth while. They are also convinced that the return of 383 per cent that was secured from the use of potash on the muck type of soil found in that county justifies a wider use of this kind of fertilizer. The story of the results has spread to adjoining counties with the result that a car of potash has been ordered through the Scott county office.

The field used for this demonstration of good farm practice with cotton is to continue in the service of better agriculture by being limed and sown in sweet clover in the spring of 1926.

* * *

City Cousin—What has that cow got the bell strapped around her neck for?

Country Cousin—That's to call the calf when dinner's ready.—*Pennsylvania Farmer.*

## What Is Land Worth

(*From page 22*)

pounds of nitrate of soda, and 25 pounds of dried blood costing $6.40 increased the yield of wheat to 29.58 bushels, an increase of 16.49 bushels per acre. Wheat under Ohio conditions has a farm value of $1.00 per bushel, the increased yield, therefore, was worth $16.49 or a net increase of ($16.49-$6.40) $10.09, which is five per cent interest on $201.80. Such simple use of a complete fertilizer on these thin, cold soils of Ohio increased the land valuation over $200.00 per acre as determined by the increased interest return and made them approximately equal to the best lands of the state.

TEN wheat fields in southern Illinois on the poorer types of thin soils gave an average yield of 8.9 bushels of wheat on untreated soils as an average of seven years. When crop residues ordinarily produced in the rotation such as corn stalks, straw, clover chaff, and cover crops such as sweet clover seeded in the wheat and plowed under before planting corn, are used and the soil treated with lime and phosphorus, the yield of wheat has increased to 24.7 bushels per acre!

The increase due to the treatment is 15.8 bushels which at $1.00 per bushel is $15.80. The cost of the fertilizer treatment is $7.75. The increase produced by the treated land is $8.05, which is five per cent interest on a valuation of $161.00.

Such data as this indicates quite clearly that the farmer as a successful business man must pay more attention to the problem of increasing the producing power of his land. He can no longer afford to farm marginal land but must either abandon such land to a state of nature or convert it into high producing land by a judicious system of fertilization.

The day of land exploitation in America is rapidly passing. Too often cheap land has been held primarily for a rise in price and farmed only incidentally. The successful business farmer of the future is going to use land intelligently as one of the four economic factors in the efficient production of farm commodities and its proper use by the farmer will determine in a large measure his success as a business man.

* * *

## Drugs for Bugs

(*From page 19*)

shown that, although the gas was generated to three or four times the amount necessary for disinfecting purposes, it killed only a few grain moths and apparently did not injure bean weevils at all.

Save the formaldehyde for the "germs" and use something with a kick in it for the bugs. One very efficient chemical is carbon bisulphide which is also a liquid, a gas being liberated when exposed to the air. It is excellent for killing insects in grain as the gas is heavier than air and, if applied to the top of the bin, will soon pass down between the kernels killing both young and adult.

It has one serious fault in that it is highly explosive and so cannot be used where any exposed flame will ignite it. If care is exercised in its use it will prove to be very efficient in the control of most insects, where fumigation is practicable.

# *Cheers and Jeers*

(*From page* 4)

Robert Benchley, eminent critic, in a recent article says, "The vocabulary of critical terms applied by actors to audiences is less elaborate than that used in the dramatic departments of the daily press, but it is none the less searching!"

"GIVEN a play which has been proven effective by the vociferous approbation of seven audiences during the week, what is there about the eighth audience that renders it dull and heavy and incapable of a similar approbation of exactly the same scene?" he asks.

Benchley cannot explain this mystery, but says, "whatever it may spring from, the fact remains that it exists and that it is simply a part of the mysterious co-relation of mind and spirit which exists between audience and actor and makes of a performance an exhibition of team-work in which the entertained are of equal importance with the entertainers."

And I might say that the same co-relation of spirit exists between employer and employee, between man and wife, between partner and partner.

If an employee fails in his duties it is as much the fault of the employer as the employee.

What the *viva* is to the bull fighter, the *attaboy* is to the ball-player; and what the *fan letter* is to the movie star or radio entertainer, the *slap on the back* is to the man who is trying!

What would this world be without encouragement? How cold, dank and dismal a place without the occasional word of compliment from one who has been silently watching from the side-lines.

"We should not be too niggardly in our praise, said Colton, "for men will do more to *support* a character than to *raise* one!" In other words, give a dog a good name and he will do his best to live up to it; but give him a bad name and he will figure he might as well have the game as the name —and will lose all desire to improve himself.

We must, of course, be extremely careful how and whom we praise for as Feltham tells us in his unique essay, "Praise has different effects, according to the mind it meets with; it makes a wise man modest, a fool more arrogant, turning his weak brain giddy."

Friedrich Froebel, originator of the kindergarten idea, has quite definitely proven the power of praise rightly used.

Froebel, working with backward children, found that to constantly remind them of their inferiority only served to cause them to become even more shy, awkward and embarrassed; while to administer praise in well-chosen words and at exactly the right moment lent them courage, brightened their spirits and stimulated them to greater endeavors.

It is said, and I think that Froebel would agree, that artists are but children.

CREATIVE minds, I have discovered, must be lead, not *pushed*. It is the very retention of the child-spirit that gives these folks their vivid imagination. Kill it with a jeer and you have lost the most valuable asset in their souls.

As a matter of fact all men who create something where nothing was before are artists and should be treated as such.

THE man who takes a blank sheet of paper and makes upon it a beautiful painting is no more a creative spirit than the farmer who sees in his mind's eye while plowing, the crops that will some day spring from the soil—who sketches upon nature's brown breast with a plow and paints a green field of corn.

The salesman who creates business—who gets a name on a dotted line where no name flourished before—is an artist in his way and has many of the temperamental attributes which are at once the curse and the blessing of the creative mind.

The organizer who takes a lot of rough folks and welds them into a smooth-running machine is an artist; how is he different from the architect who rapidly sketches from a mental picture a beautiful cathedral with all its parts in harmony?

ALL are souls in tune—thrown into this world with the itch to *do*, to *create*, to *make* something.

To say that these merely toil and work for the sake of preserving their bodies, or to get themselves bread, houses, clothing, and money is not only a sordid thought, but a libel upon the whole race of men from which they spring.

For men work as heartily to secure the admiration and commendation of their fellows as they do for money.

They strive as mightily out of love for a common mother or for a loved cause as for food. They fight as hard for the glory of winning a game as for the prize—harder, in fact.

Witness the ball player, not the professional, but the college athlete. See him willingly forego the cigarette and the other tempting delights. Watch him arise early and race to the diamond. Observe how fully his mind and heart and hand are coordinated—to *win*. To win money? *Never*. You could not *buy* that kind of devotion. You must *deserve* it.

Most of the valuable things in life cannot be gained with money. One cannot buy love, loyalty, devotion.

PRAISE and enthusiasm go hand in hand. And the first is natural sire to the other.

The manager who has learned to harness these two giant forces has at his command a team that can outpull money, the fear-thought or the lash of necessity. For as Henry Chester has pointed out, "Enthusiasm tramples over prejudice and opposition, spurns inaction, storms the citadel of its object and like an avalanche overwhelms and engulfs all obstacles. It is nothing more or less than *faith*—in action. Faith and initiative rightly combined remove mountainous barriers and achieve unheard of miracles."

An ounce of enthusiasm beats a dollar; and it is formed in the test tube of the cosmos more easily by adding a grain of praise to a mass of flesh than in any other way.

As the Prince breathed life into the Sleeping Beauty, the well placed praise draws into the empty shell of a man his heart and soul, and lo, *cheers*, not *jeers*, maketh the full man—the man of the three "h's": *Heart, head and hand!*

## SIGHT UNSEEN

"Hullo zat you, Lize?"

"Yassah."

"Is you made up yo' mind you's gwine to marry me?"

"Co'se Ah is. Who zis talkin', anyway?"—*Wisconsin Agriculturist.*

* * *

## RAISING CHICKENS

She wrote to a poultry journal that poultry raising was much to her liking and wondered how long the hen should remain on the eggs. The editor wrote:

"Three weeks for chickens and four weeks for ducks."

Later she wrote to the poultry journal as follows:

"Many thanks for your advice about the setting hen. She remained on the nest three weeks, and at the end of that time there were no chickens hatched. As I did not care for ducks, I took her off the nest and sold the eggs."—*Everybody's Magazine.*

* * *

Ole Oleson, in pre-Volstead days, came into a Minnesota village one day, and inquired of the restaurant proprietor: "Got any squirrel whiskey?"

"No," said the restaurant man, "but I can slip you a little Old Crow."

"Aye don't vant to fly," said the Swede. "Aye yust vant to yump around a little."—*Team Work.*

## HONEST LOVER

She—"Now what are you stopping for?"

He (as car comes to a halt)—"I've lost my bearings."

She—"Well, at least you are original. Most fellows run out of gas!"

* * *

Farmer: "When's the next train north?"

Station Agent: "In an hour."

Farmer: "When's next train south?"

Station Agent: "Fifty minutes."

Farmer: "All right, Mirandy, we can get across the tracks."

* * *

## A HELPING HAND

Irate Parent—"I'll teach you to make love to my daughter, sir."

Young Man—"I wish you would, old boy, I'm not making much headway."—*The Humorist* (London).

* * *

An Englishman and an American were standing before the Victoria Falls, when the Englishman said:

"Surely you must concede that these falls are far grander than your Niagara Falls."

"What!" replied the American. "Compare these to our Niagara Falls? Why, man alive, they are a mere perspiration."—*Tit-Bits.*

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In other cases the plants are *dwarfed.* If the plants are normal green a lack of phosphoric acid is indicated. In either dwarfed or normal sized plants . . by splitting the stalks lengthwise you can detect the purplish brown accumulations of iron compounds which appear in the joints. These iron accumulations also show *lack of available potash.*

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